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Syphilis of the Eye as a Factor in Industry*

Park Lewis, M.D., F.A.C.S.

THE author recommends a paraphrase of the old war-cry of Cato, Syphilis delendum est (Syphilis must be destroyed), as a slogan for a campaign for reducing accidents in industry and for reducing the number of blind and visually handicapped from this disease.

AN industrialist who is one of the largest employers of labor in this country, recently asserted that future gains in industry would not result from lowering wages nor the limiting of production but from improvements in machinery and keeping those machines that were in use in the highest state of efficiency. The small savings that may be thus effected can constitute the whole margin of profit in this age of keen competition. The most important machine in any factory is the man who runs it. Life today is going at great speed. For a man who is in charge of a powerful piece of mechanism such as a railroad engine with a heavy train behind it, it is absolutely essential that he shall have good sight and quick mental reactions. This of course is equally true of every truck driver and of every air pilot.

It is not at all unusual for trains with twelve or fifteen cars attached to cover long stretches of the road at the speed of a mile a minute. The momentum of these great masses of matter is such that they cannot be stopped, without considerable shaking up of the passengers, within less than a mile. That is equivalent to 1300 feet in 15 seconds. The engine man, consequently, must keep his eyes on the signal lights as they appear. On such a run, the eyes of the engineer must not leave the road. Such concentrated effort

* Presented at the Section of Industrial Hygiene, Public Health Nurses, and National Society for the Prevention of Blindness, Wednesday, October 6, Annual Meeting of the American Public Health Association.

cannot be long maintained so that the hours of each run, before relief comes, are comparatively short. It will be evident, then, in such a position of responsibility that not only must the sight and hearing be adequate, but the mental and muscular responses must be immediate. Anything that can affect these responses should receive attention.

Neurosyphilis is a condition in which the nerve centers and the nerve structures are especially affected and all the reactions are slowed down. An examination with the vision card may show no apparent loss of sight, but the visual and auditory nerves of a man with neurosyphilis become dulled. When tested with the colored wools, he will pick out the stronger primary colors—greens and yellows and blues—he hesitates over the reds. Red is the danger signal. He confuses it with the drabs. His responses to a like test made a year before were immediate. His reading glasses which may have been properly chosen for him, are becoming inadequate. He is requiring more light for seeing to read. Occasionally, on looking at distant objects, he sees double. His eyes have what writers call a "steely" cast, that is, the pupils are small and do not enlarge readily when the light is dim as they normally should, or perhaps the pupil of one eye is large and black while the other is smaller than usual. In the latter case he will have periods of abstraction in which he will seem to be thinking of something other than the matter in hand, or fail to hear when spoken to. At times he will look without seeing and listen without hearing.

These are some of the fortunate early symptoms of syphilis involving the nervous system, fortunate, because they are some of the premonitory symptoms that, unless controlled by proper treatment, will inevitably lead to incurable organic changes. They may anticipate these later changes by months or even years. There may be no indication in casual conversation that the subject of the slowly oncoming changes is other than in perfectly normal health, but this is the time in which treatment may still be successfully employed.

Shortly the pupils will become fixed and small. One eye may turn out. The double vision which may have been present, will become less troublesome because the sight will have grown less and the optic nerve atrophied. The feet will no longer feel the ground

in walking and a stick will be necessary for balance and support. Then locomotor ataxia will be fully developed, or, should the brain receive the greater amount of damage rather than the spine, unwarrantable optimism, cheerfulness, delusions of grandeur will be followed by ultimate dementia. It has been estimated that there are at least 50,000 people in the United States suffering from locomotor ataxia in advanced form. Twice in the writer's experience highly intelligent men, who had filled important positions, and who lacked the courage to meet blindness and physical incapacity, sought relief in suicide.

To industrialists, then, it is of first importance to know that syphilis is a constitutional disease, of which those suffering from it may be totally unconscious, subtle in its advent and protean in its manifestations. With other physical changes, any tissue of the eye may be affected. Through the vascular system persistent inflammations that occur notwithstanding treatment should always suggest the possibility of syphilis being their background. The fact that iritis may block the pupil and destroy the sight, though a frequent accompaniment of rheumatism, may not excuse overlooking the possibility of there being an underlying syphilitic basis.

A Rumanian authority has found that one-third of the eye syphilitic cases in clinics result in blindness. It is of great importance to industrialists to realize that the presence of syphilis may increase the severity of accidents and injuries to the eyes. Little cuts and bruises of the cornea that would otherwise pass unnoticed, may become extensive ulcers with iritic involvements and a consequent lowering of the sight to a point of economic blindness, which carries with it the full indemnity for complete loss of sight. The courts have held that the existence of syphilis does not lessen the responsibility of the insurance carrier unless it can be definitely shown that the loss of sight would have progressed even if the injury had not occurred.

A very fortunate condition of syphilis, however, particularly that involving the nervous structures, is that its earliest manifestations are often shown in the eyes and may be readily seen, and that the recognition of some of these prodromal symptoms does not require the skill of an expert or a specialist. The changes in the pupillary reactions to which reference has been made, can be readily

seen by any careful observer and while they are not in themselves satisfactory evidence of the existence of syphilis, for these changes may have been produced from other causes, they should at once indicate the necessity of having a blood test made. If the reaction is positive, this will certify as to the existence of the disease, although syphilis may be present even when the Wassermann is negative.

Another fortunate circumstance connected with the disease is its complete curability if the treatment is undertaken at a sufficiently early period, and also the stopping of the progress of the disease even if damage has already occurred to tissues that may be beyond repair.

How extensive syphilis is in industry may be gathered from a very few statistics. Unfortunately they are limited because no systematic effort has been made to have the blood examined as it should be in the case of everyone engaged in any activity whatsoever. In 36,000 employees of the Du Pont de Nemours works in New York, New Jersey and Delaware, 4.2 per cent gave positive reactions. It is startling to learn that 10 per cent of 300 food handlers examined in New York were found to have syphilis, but a single treatment would render them noninfective. Of 2,372 American-born coal miners in West Virginia, 5.1 per cent, and of 778 foreign-born, 6.4 per cent, gave positive Wassermanns. In the negro sections of the South and in the tobacco and cotton regions where living conditions are the worst, and where crowded, filthy cabins and undernourishment are the rule, the United States public health survey showed that from 12 to 35 per cent of those engaged in industry or agriculture were syphilized.

There is a very close relation of syphilis to the slums, although it is found in a cross-section of every grade of society. But in the insanitary tenements where families are huddled in a single room, where cleanliness is almost unattainable, infection from one member of the family to another is almost impossible to avoid. The statistician of the health board of the city of Buffalo, speaking of the effect of insanitary quarters in the transmission of the disease, said that, given the amount of tuberculosis in any area of the city, he could estimate within 4 per cent the number of cases of syphilis that would be found in that same area!

The statistics as to the incidence of syphilis in industry are still exceedingly limited, and the proportion of those who have syphilis whose eyes will be affected has been even less fully determined. In a study made in New York City of 100,000 case records, the estimate is made that 10 per cent of the adult population will, upon examination, reveal evidence of syphilis, either active or latent; and Stokes estimates that 25 to 35 per cent of persons who have syphilis will show distinct lesions of the eye or its associated mechanism during the course of the disease.

One would think that a subject of such vital importance to industry would cause a general awakening as to its recognition and control. The inquiry was made of the medical director of one of the greatest railroad lines of this country as to the amount of eye syphilis the records of the road disclosed. He writes, "I am very sorry to inform you that we have no records of the invasion of the eye by syphilis. We hope as years go by that we may eventually have something worthwhile."

If at the time the visual tests were made of those employees, there had also been a blood examination, the proportion infected with syphilis could have been determined and the average length of life of such employees might have been increased by 10 years. The indemnities which the road had been obliged to pay, it may be safely estimated, would be reduced by 20 per cent. The savings would be greater by the preservation of these human machines than all the millions spent upon the mechanical equipment. There are enormous amounts of useless records which, when they are finally analyzed, will have written on the cards of those who needed the help that medical treatment could have given: "blind," "maimed," "paretic," or "dead," for the lack of the specific medication that they should have received. The time will come, of course, when a blood test will be as much a routine procedure as vaccination against smallpox is today, but meantime the price of this neglect is costly.

We take the most obvious things casually. Thirty years ago the National Society for the Prevention of Blindness inaugurated a campaign for the control of ophthalmia neonatorum. The combined efforts of the American Medical Association, the ophthalmological and obstetrical societies, and of the boards of health reduced

the blindness resulting from this cause in the United States to less than 7 per cent. The fact that it has increased to 9.1 per cent shows that eternal vigilance is the price we pay for the preservation of sight.

The little country of Portugal with warring armies on every border, has sent out a message of peace to the world. The Government has released a postage stamp in honor of the centenary of its School of Medicine, making known to the farthest corners of the earth a worthy institution of which few of us had ever heard, and thereby proclaiming that to save life is better than to take it.

This is a striking precedent and one worthy of emulation.

We must enlist the young business interests of the country—the Junior Chambers of Commerce, and through them the various social activities of both sexes.

The blindness resulting from syphilis cannot be diminished until the disease itself is conquered.

We have openly and frankly fought tuberculosis and despair has given place to hope.

So too must we meet syphilis.

The peril that walks in the darkness must be fought in the open.

A shock is needed to arouse a public that is uninformed and which is therefore indifferent and apathetic.

The Surgeon General of the United States Public Health Service has declared war on syphilis. It is an official pronouncement.

How better could a call to service be directly given, a call that would carry the message to Garcia and awaken the people everywhere than by the issuance of a postage stamp by our government bearing the insignia of Hygeia and on which should be inscribed a paraphrase of the old war cry of Cato: *Syphilis delendum est* (Syphilis must be destroyed).

Other governments might follow such a precedent. The postal service would then be used not only to honor our heroes and to celebrate our victories but it would become a potent agent in lifting one of the darkest shadows from our land.

Glaucoma

M. Carl Wilensky, M.D.

THE importance of early recognition and proper treatment of every type of glaucoma is emphasized by Dr. Wilensky, who also provided the very excellent illustrations accompanying the article.

GLAUCOMA is the name applied to several varieties of disease in which increased intraocular tension is the most characteristic sign. One per cent of all patients seen by eye physicians has glaucoma, the early recognition of which is of the greatest importance for the general practitioner, because here prompt and proper therapeutic interference may save everything, but a false diagnosis and improper treatment will result in loss of sight.

Types of Glaucoma

Glaucoma may be divided into three types: primary, secondary, and infantile glaucoma. Primary glaucoma is the type in which the increase in pressure occurs without our being able to discover any reason for it in an antecedent disease of the eye. Both primary and secondary glaucoma may be congestive, in which case the pressure rises suddenly to a considerable height and congestive symptoms are present; or they may be non-congestive, in which instance the increase in tension develops gradually, and congestive symptoms are absent.

The congestive variety is again divided into—(1) acute; (2) chronic; and (3) intermediate cases which are sometimes called subacute.

When the increase in tension is rapid, the congestive type results. When tension increases gradually, the eyeball accommodates itself to the altered conditions, and symptoms of congestion or inflammation are absent, then we have glaucoma simplex. Simple glaucoma may change to the acute or chronic congestive type.

Congestive glaucoma is divided into four stages: (1) prodromal stage; (2) stage of active glaucoma; (3) stage of absolute glaucoma; and (4) stage of degeneration.

In most cases the prodromal stage precedes the inflammatory attack, and is characterized first of all by attacks of obscuration of vision, an illusion of a cloud or smoke concealing objects from the patient. He sees rainbow-colored rings around lights. During the attack there is frequently a feeling of tension in the eye, or a dull frontal headache. If the physician examines the eye during such an attack, he finds the cornea a little dull and diffusely clouded, like glass that has been breathed upon. The anterior chamber is somewhat shallow through advancement of the iris; the pupil is more dilated than usual and reacts sluggishly; the tension of the eye is distinctly increased. Frequently, too, slight ciliary injection is present.

Such an attack lasts several hours, after which the eye returns to normal both in appearance and function. First these attacks occur at long intervals of months or weeks, but they become more frequent. Often an attack is brought on by a hearty meal, late hours, or emotional excitement. These attacks may be cut short by the patient's going to sleep.

During the prodromal stage the patient asks for frequent changes to stronger reading glasses as there is a rapid diminution of the power of accommodation.

The acute attack manifests itself by violent pain radiating from the eye along the first and second branches of the trifacial nerve; the patient may have pain in the head, ears, or teeth; sometimes there are nausea and vomiting; and there may also be fever. Such attacks have been diagnosed wrongly as "bilious attacks."

Visual power falls rapidly away. The field of vision is considerably narrowed, mostly on the nasal side. Objective examination shows edema of lids and conjunctiva. The injection is venous in character and dusky-red in color. The cornea is cloudy and is almost insensitive to touch. The anterior chamber is shallow, the iris discolored, the pupil dilated. From the pupil we get a grayish-green reflex. Tension of the eye is considerably elevated. After some days or weeks improvement sets in; however, the vision never again is as good as it was before the attack occurred.

After the attack subsides, the condition of the eye remains quiescent for quite a long time, and the patient becomes hopeful of a permanent cure. Then a new attack sets in.

The disease then enters the third stage—absolute glaucoma, in which the eye has become completely blind. The pupil remains dilated, oval, sluggish; the iris is discolored, the anterior chamber is shallow, tension is increased, and the eye is more or less injected.

Later on degenerative changes make their appearance in the blinded eye, which we call glaucomatous degeneration. After the eye has been bad for years, it at length becomes softer, smaller, and atrophic. In other cases serpiginous ulcer may develop, with perforation and consecutive iridocyclitis or even panophthalmitis. Not until the glaucomatous eye has become shriveled does it allow its unfortunate possessor to have any lasting rest. *Glaucoma fulminans* is a rare form in which violent symptoms of inflammation develop suddenly and in which blindness may result in a matter of hours.

In glaucoma simplex, or non-congestive glaucoma, the increase in tension sets in gradually so that no inflammatory symptoms are produced. It may be necessary to examine the eye several times before an increase in tension is found. We have to depend for diagnosis on a history of gradual diminution of sight and the finding of a glaucomatous cup in ophthalmoscopic examination, or the characteristic contraction of the visual field. It is important to distinguish the glaucomatous from a large physiologic cup and from the cup formed by atrophy of the optic nerve.

In secondary glaucoma the increase in pressure is the result of some other disease or injury of the eye. Some of the conditions which may bring about glaucoma are: (1) swelling of the lens during the formation of cataracts; (2) dislocation of, or injury to, the lens; (3) following needling of the lens, discission of secondary cataract, or cataract extraction; (4) ulcers or wounds of the cornea with prolapse of iris; (5) total adhesion of the iris to the capsule of the lens; (6) iridocyclitis, uveitis, choroiditis; (7) intraocular tumors or foreign bodies in the eye; (8) hemorrhages into the retina, vitreous, or aqueous; (9) thrombosis of the central vein.

Hydrophthalmos, or infantile glaucoma, is that type in which the canal of Schlemm is absent.

Diagnosis of Glaucoma

Cases of inflammatory glaucoma are sometimes confused with iritis or iridocyclitis and are therefore treated with atropine, which aggravates the condition seriously and may result in blindness.

Eyes with glaucoma simplex, which present no external symptoms of inflammation but in which the dilated pupillary space transmits a greenish reflex, are sometimes erroneously thought to have beginning cataracts, and the unfortunate patients are put off in expectation of the cataract's becoming "ripe." In the meantime precious sight is irrevocably lost. I have seen these most tragic patients, after they have become totally and permanently blinded by the ravages of glaucoma, present themselves with the false hope that sight would be restored by a cataract extraction. The following history is an example of such a case in which, fortunately, although there was much delay, the patient was finally advised to see an oculist.

A colored woman, aged 33, began to have dim vision and noticed blue rings around lights about September, 1936. In November she went to a doctor and was told that she was developing cataracts and that there was nothing to do for it; that she should return in two years when the cataracts would "cover the sight" and then would be the time to remove them. She was advised to get a pair of glasses. In December, 1936, she procured a pair from an optician. She never could see well with them and after she had returned to him several times, the optician fortunately advised her to see an oculist. Upon examination I found her tension (Schiötz) 55 mm. in the right eye and 40 mm. in the left. The right nerve head showed glaucomatous excavation. Her left eye showed numerous posterior synechiae. The details of the fundus could not be made out because of opacities in the left lens capsule. Her vision was only 20/200 in each eye. Both of her eyes have already been operated upon, the tension has been reduced to normal in both eyes, and vision has improved slightly in her right eye to 20/100 and in her left eye to 20/50. If this patient had continued to wait until her cataracts were "ripe," we know what tragic consequences would have resulted.

Diagnosis of glaucoma should be based on: (1) the patient's history of the case, and (2) the signs and symptoms.

In the prodromal stage the diagnosis may be obscure because the physician sees the patient during an interval between the attacks,

Physiologic Excavation

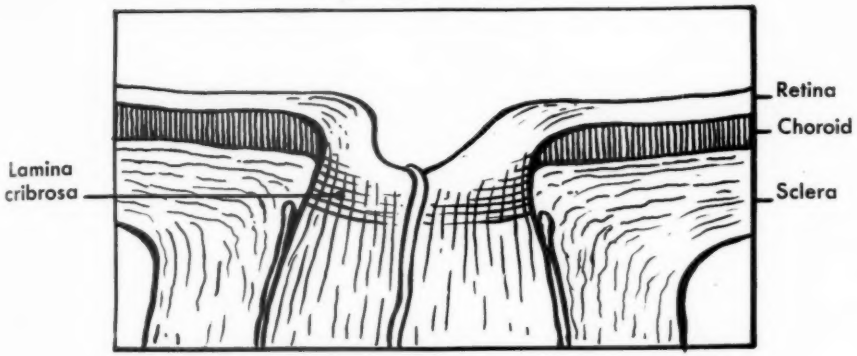

Figure 1.—The physiologic excavation is always partial. It never takes up the entire nerve head.

Atrophic Excavation

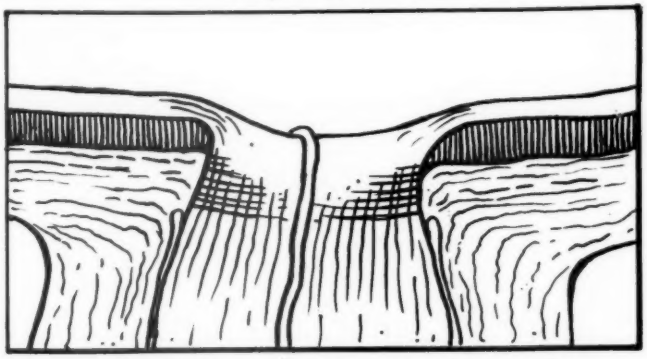

Figure 2.—The atrophic excavation is caused by the atrophy of the nerve fibers that form the nerve head. It extends over the entire nerve head, but always remains shallow.

Glaucomatous Excavation

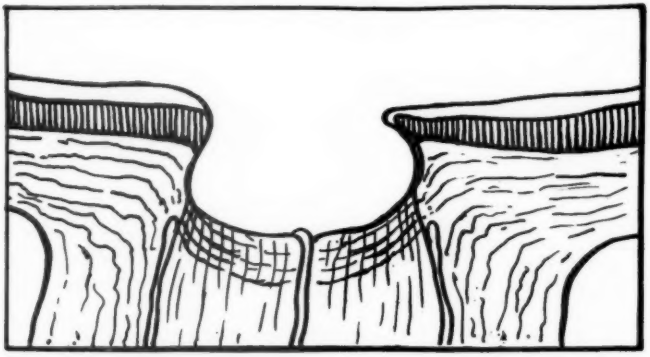

Figure 3.—The glaucomatous excavation comprises the entire nerve head. The retinal vessels are seen to dip or bend sharply at the disc margin. When the glaucoma has been present a long time, the nerve is surrounded by a light ring, due to an atrophy of the choroid.

when the eye looks normal. However, if an elderly patient has had several changes of glasses recently, the physician must be on guard for glaucoma, especially if there has been discomfort or pain in or around the eye, or if the patient has seen colored rings around lights and has had periods of dim vision.

The following is a listing of common signs and symptoms which may have significance in the diagnosis of glaucoma:

1. Congestion—this is dependent upon the type of glaucoma. In glaucoma simplex there is no congestion and so, unfortunately, the condition is sometimes overlooked.
2. Pain may be so severe as to cause loss of appetite, loss of sleep, and vomiting. Fever may even set in.
3. Intraocular tension—this is increased, except in the prodromal stage or in glaucoma simplex, when it may be found normal at times. Tension is taken with a tonometer that is placed on the eyeball after a drop of anesthetic has been instilled into the eye.
4. Reduction of vision.
5. Changes in visual field are typical. In early stages there may be a comet-like scotoma going up or down from the blind spot (Seidel's sign). Later Bjerrum's sign and Rönne's step may appear. The visual field becomes constricted, first on the nasal side.
6. Glaucomatous cup may be found upon ophthalmoscopic examination. In the congestive type the fundus may not be clearly seen.
7. Anterior chamber is shallow.
8. Iris is discolored. The pupil is dilated, has a greenish reflex, and reacts sluggishly, if at all.
9. Cornea may look steamy—like a glass that has been breathed upon.

Importance of Proper Treatment

Unless properly treated, glaucoma goes on steadily to blindness. When an operation is performed early, in the acute congestive type, the results are often favorable. The pain ceases; the cornea becomes clear and sensitive once more. Other inflammatory symptoms likewise speedily disappear. The sight, which during the attack was very much reduced through cloudiness of the cornea and the compression of the retinal vessels (nerve fibers), now increases considerably. Prognosis depends on the type of glaucoma and also on the amount of degenerative change that has

taken place when the patient applies for treatment. Operation will not restore sight lost because of excavation and atrophy of the papilla of the optic nerve. Prognosis is best in those cases that respond readily when treated with miotics. Patients who appear late—and unfortunately this happens entirely too often—have lost so much visual function and the resistance of the eye is so lowered by the disease that the prognosis is poor. However, even these far-advanced cases should not be neglected. This was most vividly brought to my attention this afternoon (November 10, 1937):

> A. B., a well-developed young Negro, came into the clinic by himself. When he made his first visit to the clinic on July 7, 1936, he had to be led. He gave a history of failing vision since 1930, when he also noticed rainbows around lights. In 1933 he began to have deep aching pain that seemed to be behind both eyes. On his first visit, vision in the right eye was only light perception and in the left eye was hand motion. Now he can count fingers at three feet.

While this patient may not seem to have much vision, it is the difference between being independent and having the ability to walk to the clinic, and having to be led. It is difficult to understand why some persons will neglect their eyes until they are practically blind before seeking medical attention.

Of course, there are cases in which, in spite of all attempts at treatment, complete blindness results.

Anatomy of the Eye

All the symptoms of glaucoma can be explained by congestion and increase in intraocular pressure. But the cause of this increase in tension cannot be positively determined in every case. Of the many theories which have been propounded, no single one is satisfactory in every respect.

The most generally accepted theory, that of Knies and Weber, presupposes a disturbance in the outflow of the aqueous.

To appreciate this better we might stop here and review the anatomy of the eyeball in order to get a better understanding of the factors involved. The aqueous chamber is bounded in front by the cornea, behind by the lens and its suspensory ligament, and laterally by the *ligamentum pectinatum* and anterior portion of the ciliary body.

The iris divides the aqueous cavity into an anterior and a posterior chamber. The posterior communicates with the anterior chamber by means of the pupil.

The portion of the anterior chamber at which the sclerocorneal margin, iris and *ligamentum pectinatum* meet is known as the angle or sinus of the anterior chamber, or iris angle. This region is of great importance; upon its integrity depends the proper circulation of the lymph.

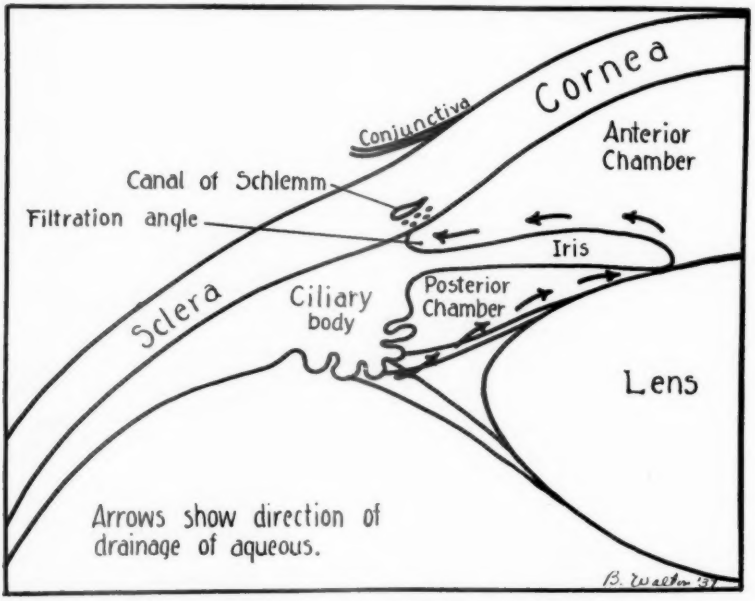

Figure 4.—Angle of the anterior chamber in the normal eye.

The *ligamentum pectinatum* is formed by the breaking up of Descemet's membrane at the margin of the cornea into bundles which connect the sclera with the root of the iris. Thus the spaces of Fontana are formed. To their outer side, at the sclerocorneal junction, is Schlemm's canal, a network of veins.

The aqueous is secreted by the ciliary processes. It first passes into the posterior chamber, then through the pupil into the ante-

rior chamber, and leaves the eye through the spaces of Fontana and Schlemm's canal, passing into the anterior ciliary veins. A portion passes into the lymph spaces of the iris, and thence to the lymph spaces above the choroid.

Predisposition to Glaucoma

Genuine glaucoma develops only in an eye which has a predisposition to it. This predisposition depends upon the following

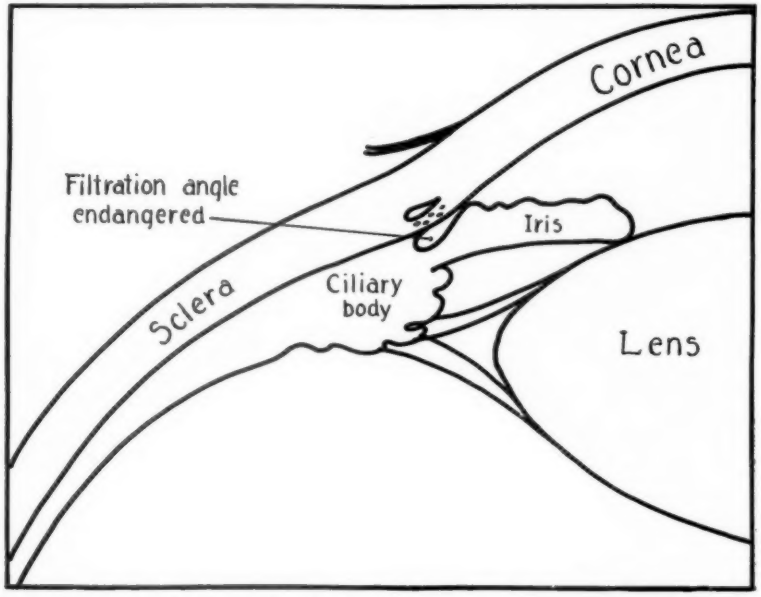

Figure 5.—Angle of the anterior chamber in hypermetropic eye with dilated pupil.

insufficient spatial relations: (1) smallness of the eye as a whole; (2) shallowness of the anterior chamber; (3) undue protrusion of the ciliary processes; (4) disproportionate size of the lens. These relations are found in the hyperopic eye when it becomes old. The hyperopic eye is smaller than the normal eye, its anterior chamber is shallower, and its ciliary processes protrude more than usual toward the lens, because the ciliary muscle is hypertrophied by the

constantly maintained accommodation. The lens in such an eye increases in size with advancing age and ultimately becomes too large, or the space between the lens and the ciliary processes—the circumlental space—becomes too narrow for the lymph to flow through from the vitreous cavity to the aqueous. The lymph becomes dammed up in the vitreous, which therefore increases in volume and pushes the lens and iris forward, thus narrowing the anterior chamber still further.

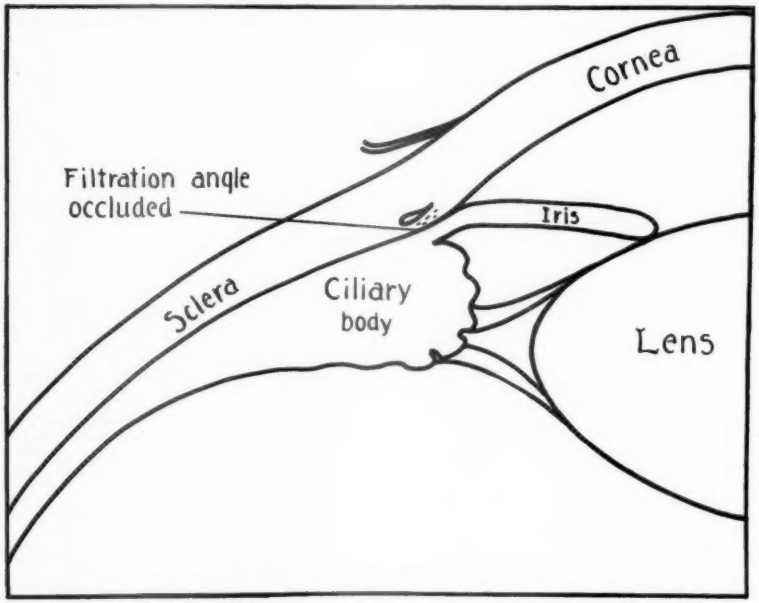

Figure 6.—Angle of the anterior chamber in acute congestive glaucoma.

An acute attack of glaucoma does not occur in the predisposed eye until the outflow is blocked by closure of the sinus of the chamber. This condition may be brought about either by dilatation of the pupil, which causes the iris to become short and thick, thereby blocking the narrow sinus of the anterior chamber, or by disturbance in the circulation of the blood, causing venous congestion, which may be brought on by worry, emotional disturbance,

insomnia, bronchitis, overeating, indigestion, cardiac disease, syphilis, gout, influenza, neuralgia of the fifth nerve, or an error of refraction. An individual who is overusing and straining his ametropic or improperly corrected eye causes a congestion of the ciliary processes which are extremely rich in veins. The ciliary processes consequently swell up. This results in a narrowing of the space around the lens. Communication between the vitreous cavity

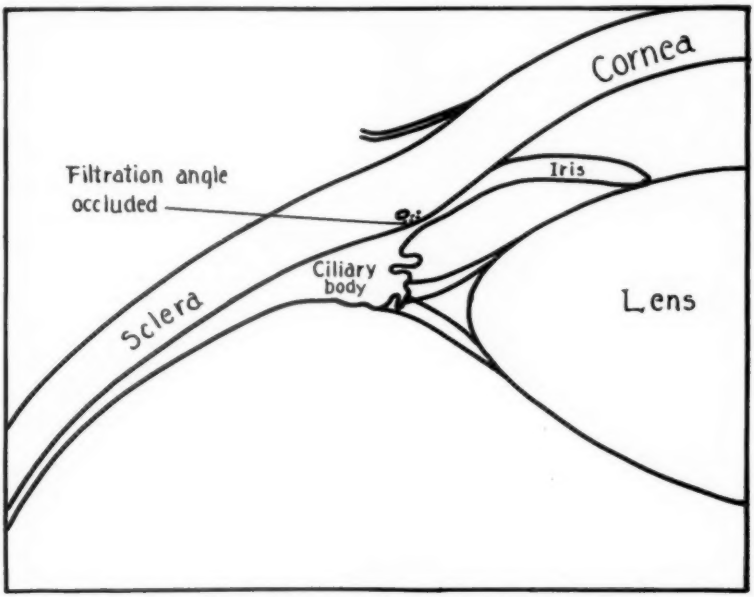

Figure 7.—Angle of the anterior chamber in chronic glaucoma.

and the anterior chamber is interfered with. The vitreous, because of retention of lymph, swells up and pushes forward upon the ciliary processes which can give way only toward the front. Consequently the root of the iris is jammed against the corneosclera. This blocking of the outflow of the aqueous through the spaces of Fontana and Schlemm's canal results in an increase of intraocular tension.

Another factor involved in this strain upon accommodation works as follows: in the eye of the young during accommodation

for the near point, the diameter of the lens is reduced to about the same extent as that of the contracting ciliary muscle. The space around the lens remains about as wide as it was before, and the zonula remains tense as before. But the conditions are quite different in advanced life; when the elasticity of the lens is lost, the ciliary muscle contracts, but the form and size of the lens

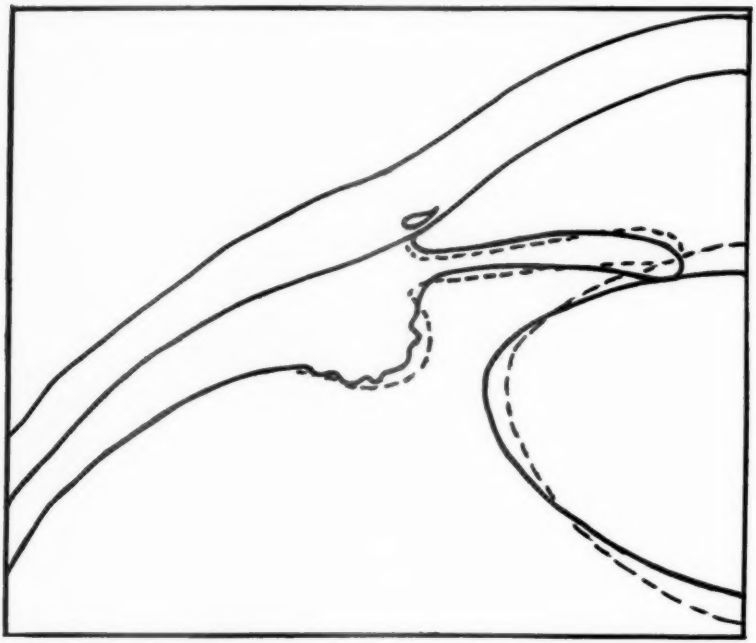

Figure 8.—Schematic representation of the process of accommodation. The relation of the parts when the accommodation is at rest is shown by the black lines. The dash lines show the relation during accommodation.

remain unchanged. The ciliary processes are thereby pressed against the lens and the zonula is slackened. Hence the necessity of correcting refractive errors as a preventive measure.

During the development of cataracts the lens may swell and precipitate an attack of glaucoma. Therefore, individuals with developing cataracts should be under the observation of an oculist.

Primary glaucoma is always bilateral, but as a rule the disease does not affect both eyes simultaneously. Most cases occur after the fortieth year. Not one per cent, according to Priestley Smith, begins earlier than the twentieth year. There may be an hereditary tendency to glaucoma.

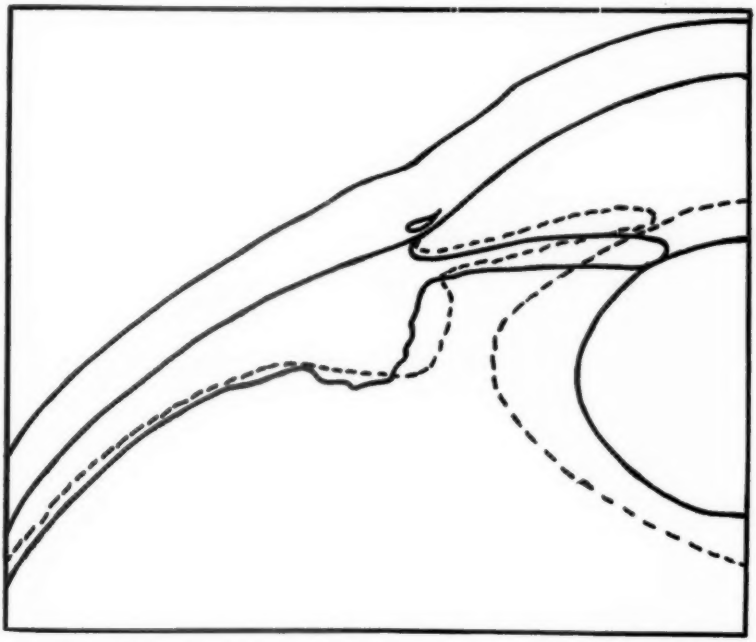

Figure 9.—Schematic representation of the predisposition to glaucoma. The black lines show the spatial relations in the young, emmetropic eye; the dash lines, the relations in the senile, hypermetropic eye.

Summary

Before one can diagnose glaucoma, one must first *think* glaucoma. Since glaucoma is the disease of the eye most frequently ending in permanent blindness, it is imperative that this condition be kept in mind. Whenever a patient presents himself with a history or any signs and symptoms suggestive of glaucoma, this lead should be thoroughly investigated until a diagnosis of glaucoma is made or

ruled out. Many tragic case histories illustrate what happens when patients are fitted with glasses several times and no suggestion is ever made that there may be some disease condition of the eyes causing the poor vision. When the physician finally sees such patients, they are, entirely too often, practically blind. Early diagnosis is essential and proper treatment must be instituted before sight has been permanently damaged.

Development of Sight-Saving Class Work in the Fairhill School, Philadelphia

M. Reba Sprowles

THIS article indicates how a home economics course and courses in salesmanship, social studies, and gardening, as well as a home-making and personal hygiene course, were incorporated in the work of the sight-saving classes at the Fairhill School, Philadelphia.

UNTIL 1935 the work in the Fairhill School was similar to that which would be found in any school having sight-saving classes. As the number of partially seeing children assigned to the school increased, it was found that many of them had somewhat below the normal I.Q. No classes had been formed for children having the double handicap of subnormal mentality and serious eye condition and the classes established for orthogenic backward children were full. Moreover it was thought that in these particular cases the eye defect was more serious than the slightly subnormal mentality; hence placement in sight-saving classes seemed unavoidable.

At this time the Fairhill School had six sight-saving classes with approximately 100 children. Another group was then added, bringing the total number of children to 110, far too many to be cared for in regulation sight-saving classes by the seven teachers available. After consulting with Dr. Edwin Adams, Associate Superintendent in charge of special class work in Philadelphia, we decided on a logical change in the organization of the work. All of the sight-saving class children in grades one through six were placed in three groups, comprising, respectively, grades one and two, grades three and four, and grades five and six. Those beyond the sixth year who were certified by the medical and psychological departments as capable of doing high school work were placed in a class to prepare them for this, in charge of an unusually competent

teacher who, in her long experience, has had the satisfaction of seeing many sight-saving class girls and boys finish high school with credit, some of them with honor.

It was arranged that the three remaining teachers take charge of those pupils beyond the sixth year who, mentally and physically, could not be certified for high school work. These range in age from 13 to 20 years. They are divided into three groups, the chief criteria for classification being chronological age and social homogeneity. These three classes rotate, all pupils, both girls and boys, having the benefit, every day, of the work offered by all three teachers.

Home Economics Course

The first course is home economics, consisting of: (1) Helping to prepare lunches for sight-saving class children and teachers; (2) canning and preserving; (3) instruction in marketing—kinds of foods to buy and actual experience in marketing; (4) setting and serving a table; and (5) special cooking asked for by the children, making of candies, cakes, and other desirable foods which are seldom made in the homes of most of our children.

The work of preparing a good, wholesome meal to be served to the children for ten cents was made possible by the assistance given by the Shallcross Parental School. Because of a bumper crop of vegetables raised by the Shallcross School children, which could not be sold because of lack of taxation on school property, we were given the opportunity of securing large consignments of vegetables several times a week. As a result, not only were we able to give the children better meals, but the materials were at hand for wholesale canning. Children in both the regular and the sight-saving classes were asked to bring in jars, and hundreds of quarts of tomatoes, beans, carrots, catsup, tomato juice, relishes and conserves were prepared by the children and used for the lunches during the following winter.

The contributions from the Shallcross School led to another activity. When Hallowe'en and Christmas came around, our children learned that they could add to the happiness of others, and great enthusiasm arose over the preparation of cakes, candies, and calendars for each boy at Shallcross. According to the report of Mr.

André, superintendent at Shallcross, and of Dr. Adams, under whose supervision Shallcross also comes, these boxes were surely well received. We do know that our children had far more of the true Christmas spirit than they had ever realized before.

The teaching of English and arithmetic centers around the activities of each group. The accounts of all incoming and outgoing moneys were kept by the children, and without realizing it children previously uninterested in any arithmetic not only were able to calculate expenditures and accurate change, but actually did practical bookkeeping. English improved perceptibly, although we had many embarrassing moments, as when Elizabeth, our head waitress, thrust her head in at the doorway of the visitors' dining room and demanded, "Do any of youse want more coffee?" It was just such occasions that afforded the motive for teaching the proper way of serving a table, and of improving English.

The following is a concise synopsis of the course drawn up by the teacher herself:

Aims.—The aims of this course are: (1) to develop a degree of skill in food selection, preparation, and service; (2) to instil habits of cleanliness in handling and preparation of foods, and to develop sanitary kitchen practices; (3) to direct pupils' attention to the relation of foods to health; (4) to prepare the pupils to share in the work in the home.

During the fall and winter term the class takes up: budgeting; menu making; selecting and purchasing foods; planning and preparing lunches for pupils, teachers, and guests; washing dishes and cleaning up the cooking room; making a study of food combinations and costs; and balancing the account.

Home Preserved Foods.—The first project of the fall and winter term is that of home preserved foods. The methods of preserving include canning, preserving, salting, drying, refrigeration, and pickling. Tomatoes, beets, corn, string-beans, and carrots are canned either by the cold pack or open kettle method.

The preserving consists of the preparation of grape jelly and apple sauce. India relish, catsup, chili sauce, and tomato juice are the relishes made by the classes.

Meats.—The preparation of meats is the second project. A consideration is given to the sources and kinds of meats; method

of cooking; food values; and care of meat in the home. The classes learn the preparation of pot roast, beef stew, roast lamb, meat loaf, ham, and chicken.

Fresh Vegetables.—The value of fresh vegetables and their preparation are the subjects of the third project. The practical work consists in the pupils' learning how to cook parsley and potatoes, spinach, creamed onions, glazed carrots, and vegetable platters.

Salads.—The fourth project consists of discussing the importance, selection, and cost of salads; and the following kinds of salad are prepared by the class: apple and celery salad, fruit salad, Raggedy Ann salad, cole slaw, pear salad, egg and tomato salad, and Waldorf salad.

Home-made Candy.—The next project takes up the subject of candy, considering the place of candy in the diet, its use and abuse, and the cost of candy. During this project the children make chocolate, vanilla, pistachio, mint, and walnut fudge. They also prepare stuffed fruits, and learn about the packing and wrapping of candy.

Hot Breads.—The first project of the spring term is the subject of hot breads. Both baking powder breads and yeast breads are included.

Desserts.—The place of desserts in menu making and the relation of dessert to the remainder of the meal are next considered. Here instruction is given in the preparation of custards, pastry, tarts, fruits, and puddings. The following cakes are made as part of the practical work: sponge cake, upside-down cake, strawberry shortcake, layer cake, cup cake, cottage pudding, cream puffs, molasses cookies, almond cookies, ginger snaps, and sponge dainties. Practice in fancy icings is included.

Informal Entertaining.—The practical work in connection with informal entertaining consists of making a great variety of sandwiches, both rolled and plain, fruit juice cocktail, fancy iced cakes, and candy.

Salesmanship, Social Studies, and Gardening

In the second activity of our experiment salesmanship and social studies are taught.

Salesmanship gives opportunity for much oral English, methods of approaching the customer, the customer's attitude toward the

salesman, the salesman's arguments for his article, etc. One of our boys secured a job for the summer selling Top Icer Refrigerators. The course also resulted in a noticeable improvement in both the appearance and manners of our children. The social studies give opportunity for a number of activities, the last one being the construction of a coal mine, showing the various levels of the mine, with tracks and cars, the elevator which worked, the breaker, screens, etc. The coming term we plan to include simple home mechanics as part of the teacher's work.

Course in Salesmanship.—Following are the topics that are included in the course in salesmanship: aims; place of salesman in business; types of positions available; types of sales positions; salesman's qualifications; how to find a job; letter of application; answer to advertisement; how to write "Situation Wanted" advertisement; how to write "Help Wanted" advertisement; synopsis of an interview; possible questions in an interview; interview score card; five buying motives; factors determining selling field; types of stores; questions for special report; and kinds of merchandise.

The Course in Gardening.—The sight-saving class garden is one of our great adventures. Since the school had no available ground, obtaining it became the first problem. The use of ground at Shallcross School was considered, but the idea was abandoned because of the transportation problem. Finally a good plot, 40 feet by 120 feet, was found a short distance from the school. It belongs to the public library and was secured without much trouble. It had been used as a ball field by the neighborhood boys, and was hard, packed clay. After our boys had raised a goodly crop of blisters trying to dig it up, we finally secured the use of a plough from Shallcross. Horses had to be provided, and these we begged from the city street-cleaning department. Grass seed and fertilizer were procured from various agencies, and some we bought. Topsoil was the next problem—some was begged after a heart-breaking experience of paying thirty dollars a ton for very questionable topsoil, and finding that a ton equals one cubic yard of soil and spreads over a very little surface.

Next came the question of suitable plants, and we gladly acknowledge contributions from Michell's, Burpee's, Mr. Ellis Gimbel, and

many other sources. The firemen next door were invaluable in many ways. Men from the filtration plant across the lot dug up plants from their own gardens, and with great hesitancy asked if they could be of use; neighbors from blocks around brought in other contributions; and the children from both the sight-saving classes and the regular classes contributed constantly. Acknowledgment should also be made to many of the members of the faculty, most of whom, day after day, carried heavy contributions from various distances. The children formed their own committees and came long distances through the heat and drought of last summer to take care of the garden. As a result, last September and October every class was supplied with cut flowers many times. Bunches of flowers were taken to the firehouse, the filtration plant, and to the library. We doubt if these children had ever experienced keener satisfaction.

This year the garden was begun early in March. The work has progressed far beyond our fondest expectations. In this, our second year in gardening, we dug paths; put in flower borders; planted trees; put in some flagstones; made a rock garden; put in a barberry and privet hedge around the whole garden; made several special flower beds; had hundreds of tulips, daffodils and irises blooming; transplanted several peach trees; made and put in a rose arbor with a weathervane on top; put in a bird bath, sundial and concrete bench, all of which had to be fastened down with cement to insure against theft; planted ivy, lilies of the valley, and other low plants around each. Altogether we have quite a presentable garden. When September comes again we are expecting to be able to furnish even more flowers than we did last year. This year one end of the garden was used to raise a few vegetables. Those not eaten raw were used in the school kitchen. The chief object of the vegetable garden was to let the city children see how vegetables grow.

Before leaving the school for the garden each child has a written assignment of work handed to him, so that there is no haphazard work and no time is lost.

That the children love the garden work is evidenced by their early arrival, giving up lunch periods to finish assignments, and visiting the garden after school dismissal.

The English and arithmetic in these activities center around the garden work. When the bird bath was presented as a complete surprise by one of the regular classes, a volunteer was requested to reply to the presentation speech. One girl asked for the privilege, and, in sincere and graceful sentences, accepted the gift and expressed the appreciation of the sight-saving classes. One of the sight-saving class teachers murmured to me, "And they say this has no educational value."

Our garden was started purely as avocational, but some well worth-while vocational results are developing.

Through the influence of one of our attendance officers and of some of the Juvenile Court authorities we have placed three boys on farms. Herbert, the first boy placed, a boy about nineteen years old, was keenly impressed with his obligation to make good because of its influence in getting jobs for other boys. His work was more than satisfactory to his employer. He is working on a dairy farm. His employer is keeping part of his wages for him, promising that in a few years he will be able to make a down payment on a farm of his own, and offering to help him buy and start the place.

Home Making and Personal Hygiene

The third activity in our experiment is in many ways the most interesting. Here, again, we are fortunate in having an unusually talented and enthusiastic teacher willing to spend herself to the utmost for the benefit of the handicapped children.

Home Making.—The first term was devoted to teaching the care of the home and the care of the baby. Since we believe that the greater part of the lives of these children will be spent in the home, and since babies are far from a rarity in most of these homes, the practicability of the course could not be questioned.

A large doll was donated by a friend of the teacher. The first lesson consisted of teaching the writing of congratulatory cards, sending gifts, etc. A display-worn bathinette and shopworn layette were obtained at little expense. The baby was given actual water baths, followed by olive oil treatments. Methods of dressing, carrying, and feeding the baby were all carefully taught—how to make its bed, place it in the bed, and cover it for protection against insects, how to launder its clothes, prepare its food—all received

attention. An improvised refrigerator that actually works was next attempted, and then a hand-made screen covered with baby pictures was made. If nothing else was accomplished, we should feel repaid by the attitude of respect and admiration for a well-appearing, clean child, which gradually developed among our children. It is a joy to see some of our older boys carefully carry the newly bathed and well-dressed baby to the office for official inspection of the clothes which the children had laundered.

Scrubbing, sweeping and dusting the home are given careful attention. How to make a bed correctly and many other details of home keeping are discussed and demonstrated.

Personal Hygiene.—This year, feeling that repetition of the same work might not be wise, personal hygiene became the subject for discussion. After much trouble with state authorities because of beauty shop laws, the teacher was permitted to take a course herself and to present the subject as a course in personal hygiene. Materials, including a second-hand drying machine, shampoo and manicure supplies, were bought at wholesale prices.

First, manicuring and massage of hands, arms, and elbows were taught. Later, shampooing, hair-arrangement, finger-waving, and hair cutting received attention. The teacher interested one hairdressing establishment in giving each girl in the class who desired it a professional permanent wave free of charge. What this has done to awaken their interest in their personal appearance is beyond words to describe. Naturally this involves laundering of towels, etc., all of which is done by the children in a small tin tub placed on the floor. We are hoping that by the time school opens this fall promised laundry tubs and shampoo basins will be installed by the board of education.

The course in personal hygiene and home making aims to create an interest in personal appearance; to develop an appreciation of correct dress; to form correct habits in care of hair, skin, teeth, nails, and clothing; to learn the principles of color harmony in clothes, accessories, and jewelry; and to recognize the importance of posture in health and appearance.

The importance and methods of sterilization and sanitation are considered and care of instruments and cabinet sterilizer, as well as the use of disinfectants and antiseptics, is taught.

The care of the supplies, such as towels, glassware, combs and brushes, scissors, clippers, nets, and shampoo aprons, is included in the course.

Under the subject of the skin, cleanliness, make-up, diseases, and tissue creams are considered. The topic of finger nails includes manicure, polish, cleanliness, and stains.

The study of hair covers the following: composition, varieties, uses, brushing and care, scalp manipulations and procedure, shampoo, soaps, and waving. The study of the teeth includes home care, dentistry, and mouth washes and powders.

Clothing is discussed from the point of view of appropriateness, materials, and styles. The subject of shoes is included.

The course in home making includes: care of furniture, glass, and linens; and the study of baby care includes the subjects of senses at birth, and the care and feeding of the baby.

In all three grades, English in all of its phases, as well as geography, hygiene, music, and arithmetic, is correlated with the special work.

Conclusion

The coming term will, of necessity, have many changes and additions. The work cannot be static but must meet the needs of the children and must be adapted to the limitations as well as to the possibilities of the equipment. With the growing interest shown by members of the department of superintendence and by awakening the interest of members of the board of education we hope to secure equipment to keep pace with our ever-widening plans for giving to these children practical training for living in the world in which they must find their places.

It has been said that, as a group, teachers of sight-saving classes are wholeheartedly devoted to their work. It has also been said that anyone looking for an easy job had better choose some other field. May I add that without patience, perseverance, and unlimited courage, a teacher is unwise to try experiments which may necessitate battling with the authorities and enduring heartbreaking disappointments and delays. May I also add that for those who are really interested in and fitted for this work, no other field of teaching can offer greater satisfaction.

The Rôle of the Social Worker in a Prevention of Blindness Program*

Lewis H. Carris and Eleanor Brown Merrill

THE social worker interprets the doctor's findings to the patient; she interprets the patient's social and personal problems to the doctor, informing him of the relevant facts; she urges examination and treatment of other members of the family when needed; and is responsible for follow-up. The fulfillment of these responsibilities in the care of eye patients is an active contribution to the sight conservation program.

THIRTY years have passed since a nation-wide lay program for prevention of blindness had its beginning in the United States, through the formation of a small volunteer committee in New York. And from the first, we note emphasis upon the social significance of visual handicaps and upon the responsibility of society as a whole to take part in the control of eye disorders.

The leading position of ophthalmology in preventive measures is well recognized and cannot be questioned. Remedial and restorative care provided through the skilled services of this professional group gives sight to many who might otherwise be doomed to lives of darkness; scientific knowledge as to the cause of visual loss and the possibility of safeguarding the eyes against deterioration and damage must be the foundation on which any program for prevention is based. Therefore, the ophthalmologist's responsibility for promoting and guiding activities in this field is great. That he, in a large measure, is meeting this responsibility is evidenced by attendance at this meeting, by the great amount of time and thought which our colleagues on the International Board and

* Paper presented at the annual meeting of International Association for Prevention of Blindness, held in Cairo, Egypt, December, 1937.

on the governing bodies of many national organizations are giving to the subject, and by the part they are taking in educational measures, as well as in the application of that special technique to which they have been dedicated.

Through the years, however, has grown an increasing awareness of the problem of safeguarding eyesight—not as the responsibility alone of any one group of individuals, but as a widespread obligation. The tragedy of blindness, the crime of needlessly impaired vision, do not reflect solely upon the individual and create a personal problem between him and his physician; nor can the world in general continue to accept with equanimity or fatalistic unconcern the fact that thousands suffer untold misery for lack of proper preventive measures. Educators, public health officials, nurses, industrialists, sanitary and illuminating engineers, social workers and all in any way concerned with human welfare must take their rightful place in the attack upon this social enemy.

Dr. Park Lewis in his stimulating paper* has laid emphasis on the social significance of efforts to prevent blindness and has further stressed the necessity of joint action if successful results are to be obtained. Upon the present speakers has devolved the task, or rather the privilege, of discussing specifically the rôle of the social worker in a prevention of blindness program.

Developments over the past quarter of a century have shown marked increase in a readiness to consider the welfare of each individual from the standpoint not only of his own needs, but also in relation to the community as a whole. Likewise, noticeable advance has been made in the disposition to consider handicapped or unsuccessful persons as individuals rather than as members of any particular group—each with his own personal problems to be treated and solved through individualized consideration and service. In case work, emphasis is put upon the need of understanding the health, emotional and economic problems of one's client; of seeing him as a member of a family group in which heredity, environment and personality must be taken into account; of relating his particular difficulties to the community itself and seeking help through various channels in their solution.

* "The Social Aspect of the Prevention of Blindness," presented at annual meeting of International Association for Prevention of Blindness, Cairo, Egypt, December, 1937.

Reports from many countries bring before us the heavy toll of government and private expenditures for the treatment of eye disease. It is impossible to get any clear picture of the extent to which clinics and hospitals are ministering to persons suffering from preventable eye diseases. Certainly a visit to any ophthalmological dispensary in the United States will show many with seriously impaired vision who by proper health teaching and guidance might never have been thus handicapped. Certain it is, too, that a vast number of patients, returning sporadically for treatments which because of their irregularity cannot but be unsatisfactory, could with proper control and planning be given remedial care that would clear up the condition and prevent further complications. Many who shop around from clinic to clinic in hope of a magic cure need that personal service and guidance which will insure consecutive and concentrated care.

The rôle of a social worker in the clinic or hospital which handles eye patients is a full one. She must interpret the doctor's findings and give her client an understanding of the condition and its needs, in order that there may be willingness to follow the prescribed treatment. She must interpret the patient's social and personal problems to the doctor in order that he may judge of their significance and advise in the necessary adjustment. She must inform the doctor of relevant facts, gained from her acquaintance with the family and home, which may have a bearing on the cause and progress of the eye involvement. She must secure examination and treatment of other members of the family when the need for such is apparent or even suspected. She must see that patients report to the clinic for treatment or check-up as directed. She must help in the solution of such economic or social problems as may be interfering with successful treatment.

May we draw upon the experience of a worker in the social service department of a large hospital to show some of the considerations involved in successfully handling many an eye case?

A nineteen-year-old Negress was referred to social service for instruction as to medical recommendations, and also to secure regular clinic attendance. Her trouble was a tubercular keratitis; and the need for guidance was apparent, so that both the patient and her family would realize the importance of proper diet, hygiene

and precautionary measures in the home. It was only in following this case intimately that the hospital personnel became aware of the extent to which this individual's eye difficulty was involved in the whole social and public health picture. Acquaintance with the home situation revealed that the patient was married and that a baby, born in the past year, had died at birth. The cause of death, as recorded in the hospital, was tuberculosis and congenital lues, with birth injury and malnutrition as possible contributing factors. A next step was to ascertain the husband's physical condition; and when tests disclosed the presence of syphilis, his acceptance of the necessary treatment was secured. He attended the salvarsan clinic regularly, and later another child was born free from handicap.

One can visualize the fine, professional technique employed in bringing about so happy a solution of a difficult and far-reaching problem. Though a higher standard of living was set by the institution of more balanced and appetizing meals, this was accomplished through interpretation and the teaching of food values rather than through increasing the family income. Similarly, patient and repeated explanation of the need for fresh air, sanitary precautions and regular living habits brought about an improved environment and adoption of a more wholesome life on the part of both husband and wife. With this social treatment as a supplement to the medical services so freely rendered through clinic provisions, we see the tubercular keratitis of our eye patient and her husband's syphilitic condition both clearing with every likelihood of permanency; we see awakened understanding of right living conditions and of family and community responsibility; we see the result in a healthy young future citizen instead of a child who, if life had been granted him, would have been a liability upon community, state and government.

The contribution which can be made to the field of sight conservation through social service in eye hospitals and clinics is being recognized in the United States where, to mention but one other diagnostic group, special emphasis has been put upon the value of such service with glaucoma patients. In a study conducted over a number of years at Massachusetts Eye and Ear Infirmary, in Boston, a worker was assigned to follow all glaucoma patients through the social service department in order to prevent lapses in treatment and to secure their fullest possible co-operation. Over

a period of seven years the number of cases under care increased from 200 to over 1,000, of which 654 were of primary type. Of these last, who reported regularly to the clinic from year to year, only 51 had to be referred to the Division for the Blind—a telling fact in view of the disastrous effects which this disease, if unchecked, may have upon eyesight. A social worker's part in the accomplishment of such results is plain. Through her close association with the ophthalmologist in charge she has opportunity to learn his opinion in regard to each case and his prognosis as to its future. She must use the knowledge so obtained in interpreting the condition to the patient and in helping him adjust to the situation. In this she may need to build up the patient's morale, secure more appropriate occupation, instruct both patient and family group in general and eye hygiene, secure medical attention as indicated, and help to untangle social and economic problems.

Centuries ago a Jewish physician, philosopher and theologian (Maimonides, 1135–1204 A.D.) preached: "The purpose of medicine is to teach humanity the causes of ill health, the correct methods of dieting, the ways for making the body capable of useful labor, how to prolong life and how to avoid disease." Are not these concepts the foundation of our present public health practice and must not a prevention of blindness program follow a like philosophy as it may be related to the specialty of eye conservation? To the world at large we must teach the causes of blindness and of defective vision, the place of nutrition and hygiene in relation to eye health, methods of safeguarding the eye against injury and harm and of keeping it in a state of greatest possible usefulness.

With different emphases and greater or less elaboration of this central theme, medical, public health and welfare workers must unite in what from the standpoint of mutual participation may be considered a common program. It is indeed encouraging to note that each year brings more universal acceptance of the belief that through one channel or another steps must be taken to see that the heavy toll of suffering and economic loss from unnecessarily impaired vision must be brought to a minimum. Report has been made elsewhere at this meeting of the countries now engaged in organized efforts to this end, and results, though difficult to measure, will be seen in an awakened consciousness of the need and a

unanimity of action. That such action may be centered under any one of several auspices is noted in the variation in administrative set-up. In the United States, for instance, prevention of blindness programs have been established by state departments of welfare in connection with their activities for the blind, by state boards of education, by boards of control, and by private undertaking. Recent thought has been given to the demonstration of one or more programs in sight conservation under public health auspices, through organizing units in certain state departments of health which may act as integrating media for all allied medical and social services, while at the same time providing a central bureau for concentrated effort.

An all-inclusive project, as considered, calls for closest working relations between physicians, educators, nurses, welfare workers, industrialists, vocational advisers, volunteer organizations and commissions for the blind. Whether the particular point of focus be placed under health, medical or welfare auspices—of official or volunteer nature—may be immaterial, so long as the undertaking is recognized in its true character of a positive, constructive effort to keep well eyes well and prevent destruction of sight.

And what of the social worker's rôle in a far-reaching enterprise of this nature? By reason of her training and experience in the field of human relationships, is she not peculiarly fitted to interpret the functions and aims of her program to the community and develop that esprit de corps which will lead to a full understanding and sharing of responsibility? Is she not ready to serve as a specialist in the social implications of eye disease, acting in capacity of adviser, consultant or case worker, as may be required in the accomplishment of a community plan for sight conservation?

Social work has been defined as neighborliness—a hospitality to the ideas, problems and aspirations of others. With this definition in mind, we can think of the social worker in a prevention of blindness program as one prepared to render real and vital service in our progress toward the desired goal.

Prevention of Blindness in South Carolina*

Pierre G. Jenkins, M.D., F.A.C.S.

DISCUSSING the prevalence of blindness in his own state, Dr. Jenkins points out various activities in sight saving which should be incorporated in a state-wide sight conservation program.

OF all the faculties, that of sight is most precious—next to the mind itself. Therefore, as our opportunities for prolonging life increase, so in direct proportion we increase our responsibility further to protect and to conserve these faculties that make for greater usefulness and happiness to those individuals whose span of years has been increased. The mere prolongation of life to some people already afflicted with a condition which prevents their fullest enjoyment of life is but prolonging a misery; and so it is with that great affliction which we call blindness.

The sentence of blindness, to many, is worse than the definite knowledge of certain and approaching death. On the other hand, the mass psychology of our times has led to a seeming indifference or callousness to human distress. Sometimes it almost seems that the natural instinct of the civilized human being to recoil from seeing, hearing, or reading about painful and mutilating accidents and horrible destruction of human life, is no longer present. Nevertheless, the keeping alive of this instinct is all important to the preservation of the race.

It is not a cowardly attribute to recoil from the thought of war, because it sickens our souls against the suffering and misery which it causes, and thereby awakens in us an urge to fight for those things which might prevent it. And so it is in our contemplation of devising ways and means for fighting disease. We must ever keep

* Paper presented at the 30th Annual Meeting of the South Carolina State Nurses' Association, held in Columbia, South Carolina, October, 1937.

before the people the actual horrors that would be visited upon a community should a dreadful scourge afflict the land at any time.

"And sudden death"—to borrow a well-known title from a remarkable and telling story, depicting the horrors of highway accidents, could well be applied at times to public health methods of educating the public. To modify that title, "AND SO, BLINDNESS," would be an excellent slogan to use in order to arouse the public in this State, not only to the plight of those already blind, but to inaugurate and keep going an effective program in the matter of preventing blindness.

The prevention of blindness, aside from its peculiar application to any particular geographical territory, includes many of the most important phases of preventive medicine itself.

What is Blindness?

It is important that we establish a definite and uniform policy the country over as to just what we really mean when we say that an individual is blind. In the past, many states have set up rather widely different standards in this matter. We must remember that there are varying degrees of blindness. The average individual usually assumes that a blind person is one who does not see anything, or possibly one whose maximum vision barely enables him to see light. It is said that this description would cover about one-half to two-thirds of the persons usually considered blind.

The Committee on Statistics of the Blind groups the blind into five categories, as follows:

1. Totally blind or having light perception only
2. Having "motion perception" and beginning "form perception" (up to 5/200)
3. Having "traveling sight" (5/200 to 10/200)
4. Having ability to read large headlines (10/200 to 20/200)
5. Borderline cases (20/200 or more, but not sufficient for use in an activity for which eyesight is essential).

The standard for South Carolina, as set forth in a recent communication from Dr. C. L. Kibler, supervising oculist of the South Carolina Board of Public Welfare, reads as follows: "The South Carolina Public Welfare Act states that a blind person must 'have no vision or whose vision with correcting glasses is so defective as

to prevent the performance of ordinary activities for which eyesight is essential.' The Federal Social Security Board and the State Department of Public Welfare have ruled that this is economic blindness and that economic blindness exists 'where there is visual acuity in the good eye of 20/200 or less.' "

In this connection, to quote from a paper by Miss C. Edith Kerby, statistician of the National Society for the Prevention of Blindness, "This knowledge of the degree of handicap is of interest, not only to the statistician but also to the administrator or case worker who may wish to use it as a guide in solving training or placement problems. It goes without saying that the ophthalmologist is obviously the best person to make an adequate determination of degree of vision.

"Nurses and case workers in general can make a noteworthy contribution, first by educating the public to the importance of eye examination; second, by referring suspected cases for examination at the time of occurrence of blindness, or preferably before that time; and third, by gathering for the examining physician authentic facts about the histories of the cases."

Prevalence of Blindness

At this time our state, as well as most of the other states in this country, is sadly in need of certain facts regarding blindness, before any program of prevention of this affliction can even be intelligently started. We do not know exactly how many blind people there are in this state. The United States census for 1930 reported that there were 63,489 blind in the United States. They admit this is an underestimate—that a figure nearer 100,000 or even greater would probably be more correct. This census (United States, 1930) report gave South Carolina 1,028 blind. Of this number, 456 were white and 572 colored. Dr. C. E. Rice of the United States Public Health Service states that by increasing the census findings by 50 per cent one can come nearer the true figure.

The Bureau of Research and Statistics of the Social Security Board in Washington, through its chief, Miss Mary Ross, recently made the following statement in a personal communication: "So far as we are aware, there is not even available any reliable recent estimate of the total blind population."

The American Foundation for the Blind estimates from its own researches that the ratio of the blind in the United States is one to every thousand seeing persons, and, applying this ratio for the country as a whole, the Foundation in a recent communication states that the blind population in South Carolina would be about 2,500. Mrs. Hirst Gifford, field representative of the Foundation, in a recent personal communication, states that from the information which was obtained last year in Charleston and Greenville Counties respectively it would seem that the blind population of the State would exceed this number.

We, therefore, see that, even with inadequate statistics, there is definite evidence of the existence of much blindness in this state. It is not too much to venture the statement that a considerable proportion of blindness occurring in South Carolina can be prevented. This statement is based on the facts concerning the causes of blindness in general as applied to the problem in our state.

The same inadequacy of statistics exists concerning causes of blindness as of the number who are really blind. Medically, we know what various eye disorders cause blindness, but the problem has been the obtaining of figures showing the proportional distribution of these etiological factors.

Committee on Statistics of the Blind

A great step forward in clarifying our knowledge in this regard has been made within the past few years by the Committee on Statistics of the Blind, joint'y sponsored by the American Foundation for the Blind and the National Society for the Prevention of Blindness. They have drawn up a record form for physicians' reports on eye examinations which is concise and remarkably complete, and which enables the examining ophthalmologist to record his findings on a blind or near-blind patient in a way which will furnish statisticians, welfare boards, and health officials with material for future studies directly applicable to the work of prevention.

The recently set up South Carolina Board of Public Welfare has sent out forms which are practically identical with that designed by the Committee on Statistics of the Blind. These forms are filled out by the examining ophthalmologist for those seeking blind assistance under the Social Security Act.

There are many blind or near-blind patients, who, of course, do not come under the designation "needy blind." Therefore, information concerning them could be obtained only through their private ophthalmologists. It would be an excellent procedure for all ophthalmologists to keep a record, similar to the form mentioned above, of all blind or near-blind patients, rich and poor, and when the next general census is taken, or information is sought by such agencies as the Committee on Statistics of the Blind, these records (not necessarily the names of the individuals) would be immediately available from this important and reliable source. With the cooperation of many ophthalmologists throughout the country, the Committee has already secured much valuable information on the causes of blindness.

Using some of the figures as to causes of blindness in the United States, we can safely assume that the same factors operate as well, and in proportion, to the blind population of South Carolina. Only a few of the factors can be discussed here, and these have been selected not only because of the greater percentage of occurrence, but because they are at least in one group of factors peculiarly prevalent in this state, and furthermore are preventable. The latter group, that of the infectious diseases, classed as etiological factors, includes syphilis and ophthalmia neonatorum (so-called "babies' sore eyes"). This group accounts for 15 or 25 per cent of the cases of blindness, and the two diseases mentioned are the most important diseases in this group.

Syphilis as a Cause of Blindness

It is said that the general estimate that 15 per cent of all blindness is caused by syphilis would seem conservative. The American Foundation for the Blind states that the main cause of blindness in South Carolina is probably syphilis, basing its estimate on surveys made last year in two large and widely separate counties of the state.

The eye lesions resulting from syphilis, which we so often see, are frequently those associated with the inherited form of this disease. This is especially evident in children and young adults, who are the victims of interstitial keratitis, a lesion of the cornea —probably one of the most common stigmata of congenital syphilis.

Untreated, this condition in its acute stages produces marked impairment of sight and its end result is often blindness of varying degree.

The great concern of the ophthalmologist in these cases is that the patient should receive prompt and adequate antisyphilitic treatment. "The treatment of congenital syphilis is directed toward arresting further advance of the disease, healing of the lesions already present, and finally complete eradication of the infection."

Every recurrent attack of inflammation in the eye renders the prognosis for sight in that eye much less bright. It has been definitely shown that recurrences in the same eye, and involvement in the thus far unaffected other eye, can be sharply reduced by carrying out prompt and prolonged antisyphilitic treatment.

There is no condition which produces blindness (except ophthalmia neonatorum) in which the public health nurse and social worker can be of greater service than in this disease. Many patients, in spite of warning by the doctor that even though their eye symptoms, in the first attack, may and usually do improve within three months or less, do not seem to realize that the cause of the eye disease, syphilis, must be treated for a much longer period of time—possibly a year, and often longer—if their sight in years to come is to be preserved.

These patients must be followed up by the public health nurse or the social worker, and be encouraged to continue treatment. Furthermore, when such patients present themselves, it is most important that an effort be made to bring their parents under observation, for at least blood Wassermann and Kahn tests. In so doing we go a step further in preventing blindness from congenital syphilis. Many of the patient's families will be found to be infected and should be given antiluetic treatment. In fact, a sound public health policy, and one which is actually practised in the syphilis clinic at the Wills Eye Hospital, Philadelphia, is to examine not only the parents of these patients but all other living offspring of these parents, for stigmata of congenital syphilis, and to give the appropriate serologic tests. Of course, anyone found with the disease is put under treatment.

It is impossible to carry out such a program without a staff of trained field workers, so to speak, such as public health nurses or

trained social workers, or both. Such a personnel should be added to all public eye clinics in this state.

Interstitial keratitis as a cause of impaired sight and blindness can be largely removed when a commonsense program of syphilis control and prevention has been inaugurated and practised.

Wassermann Test for Pregnant Women

Surely the prevention of congenital syphilis and the prevention of blindness go hand in hand. There is no surer method of preventing congenital syphilis and its frequent accompaniment of blindness than by treating intensively and adequately the syphilitic pregnant woman.

An authority has stated, in this connection, that "it has been clinically proven that in the vast majority of instances congenital syphilis can be prevented by the institution of adequate treatment before the fifth month of pregnancy, even though the expectant mother be asymptomatic." He further states that "every family physician and prenatal clinician should never neglect to take a careful history and physical examination, including a Wassermann test, on all pregnant women before the fifth month of gestation."

It should be the duty of public health nurses constantly and in no uncertain way to stress to women the important fact of seeking medical advice and examination in the early months of pregnancy; for, in this way, syphilis in the mother may be detected in the beginning of her pregnancy, and if adequately treated, viable births, negative for congenital syphilis, may be markedly increased, and, on the other hand, viable births, positive for congenital syphilis, may be greatly decreased.

This method of attack is vital in our war against syphilis and its train of such tragedies as blindness. It is of interest to note that this method of attack is about to be carried out in an intensive manner in the out-patient department of Roper Hospital in Charleston. Those in our midst who are qualified to direct this work, state that great inroads against the prevalence of syphilis can be made in this way, and it is to be hoped that a similar program will be carried out throughout the State.

Follow-up work on those with acquired syphilis, suffering with other eye lesions resulting therefrom, such as acute and chronic

iridocyclitis, choroiditis, and lesions of the optic nerve, is also essential in the preservation of sight.

It is to be hoped that the announcement made last year, of the great war to be waged in this country against this devastating disease, which causes probably more blindness than anything else in South Carolina, will not fall on deaf ears of the medical profession and public health workers in this state.

The public must be educated, and largely by nurses and social workers who are engaged in public health work, but let those of the healing branch of medicine and those of the preventive branch of medicine get together in this great struggle and start to work immediately.

From our available knowledge, is it too much to say that when syphilis is conquered in this state, so will the major portion of blindness be prevented?

Ophthalmia Neonatorum

The early part of the twentieth century presented the situation that approximately 25 per cent of the inmates of institutions for the blind, in several large and progressive states of this country, were in these institutions because their blindness resulted from ophthalmia neonatorum. This fact is significant, especially in the light of the discovery by Credé, in the year 1881, of a method which he conclusively demonstrated at that time would prevent blindness from this cause. Up to the year 1907 this high percentage of cases of blindness resulting from this disease not only held true for the older inmates in these institutions, but also represented the average percentage of new cases being admitted to these institutions.

The year 1907 really marks the beginning of the work of prevention of blindness in this country, and this movement was largely inspired by the concern which many of the leading ophthalmologists of this country felt regarding the large number of cases of blindness resulting from ophthalmia neonatorum.

This, under the leadership of medical men, was the beginning of the work of that great and worthy organization, now known as the National Society for the Prevention of Blindness, which is entirely maintained by voluntary subscriptions. There is no organization in this country which has contributed more to the preven-

tion of blindness than this Society. The widespread dissemination of knowledge regarding the prophylaxis of ophthalmia neonatorum, by this Society, in the past thirty years, has contributed greatly to the 75 per cent reduction of blindness from this cause. The work of public health nurses in their contacts with midwives, and the instructions given them in caring for the eyes of infants at birth, has also been contributory to this great reduction in the number of cases of blindness caused by ophthalmia neonatorum.

To some of you it may seem unnecessary to discuss this condition as a cause of blindness to-day. But we must always remember that what has been accomplished in this regard has been due to the constant vigilance of the medical and nursing professions and of the public health authorities. The usual case of ophthalmia neonatorum which is most commonly seen, and the type which usually results in blindness, even if expertly treated, is that due to gonococcus infection. The prevalence of gonorrhea is an ever-present menace to health among the people of this state of South Carolina, and as long as this prevails, the possibility of contaminating the eyes of the newborn is always great. Therefore, a re-emphasis of the dangers of this disease and its continued presence among our population is always timely.

The South Carolina State Board of Health, in its 56th Annual Report (beginning July 1, 1934, and ending June 30, 1935), states that there were 136 cases of ophthalmia neonatorum occurring in South Carolina during that period. The following year, in the 57th Report, and for the period between July 1, 1935, and June 30, 1936, there were 116 cases.

It is of interest to note that of the total of 136 cases of ophthalmia neonatorum in South Carolina, for the period July 1, 1934, to June 30, 1935, thirty-seven occurred in one county, and the same county reported an occurrence of 39 of the total of 116 cases in the state for the period from July 1, 1935, through June 30, 1936.

In fairness to this county it should be pointed out that at least the cases seem to have been reported; in another large county, no cases of this disease were reported for either of the years mentioned, but after a careful check up of the records in the Charity Hospital in that county, it was revealed that at least 10 to 20 cases of ophthalmia neonatorum were being treated each year.

No doubt this laxity in reporting this disease to the local health boards exists in many of the counties of South Carolina. Certainly the prevalence of this disease is much greater than our health statistics reveal. A conservative estimate of its average annual occurrence in this state would probably be from 150 to 200 cases. In spite of the treatment which probably has been received, many of these infants to-day are either partially or totally blind.

Investigation has shown that in some areas in South Carolina, practically all of the cases of ophthalmia neonatorum occurred when the mother had been attended by a midwife. Usually where the public health personnel of a county maintains constant and unrelenting supervision over the work of midwives, the disease is not so prevalent. This is truly a public health problem, and one which can largely be solved by means of instruction and education through the public health nurse in a tactful approach to the midwife. The ideal will have been attained when we can dispense with the services of the midwife, but it seems that she will ever be with us.

One of the greatest authorities on ophthalmology has said that "there is perhaps no other eye disease in which the rigorous carrying out of prophylactic treatment would afford more gratifying results than in conjunctivitis of the newborn (ophthalmia neonatorum), which disease, by means of this treatment, might be made to disappear almost entirely."

The problem can further be solved and a great deal of blindness prevented in this state by reporting each new case of ophthalmia neonatorum to the local board of health. In fact, we have a law which requires every nurse, midwife or other person, not a legally qualified practitioner of medicine, to report all cases of inflamed eyes of the newborn. Each physician should also report such cases to the local board of health, for if the mother has been delivered by a midwife, he can then take the necessary steps to see if the instructions regarding the care of the newborn's eyes have been carried out. The South Carolina State Board of Health requires that registered midwives instill silver nitrate in the eyes of babies delivered by them immediately after birth. South Carolina can and should improve its record of the past, as well as of the present, in regard to ophthalmia neonatorum.

Fireworks Accidents

Any prevention of blindness program connotes, at the same time, the conservation of vision. Here lies a tremendous field in which public health nursing, as a part of the great body of medicine itself, can exert a proper and telling influence upon public thought and action.

The loss of sight resulting from injuries due to firearms, and especially fireworks, during the holiday season, is an all too frequent occurrence in this state. Each year every ophthalmologist is called upon to attend cases resulting from such accidents, and often the eyes of these patients are so badly damaged that they are beyond the point where even modern surgery can preserve the sight. The present laws regulating the use of these instruments of needless destruction to sight, and often to life itself, should be revised and made more stringent, and, furthermore, the police power of health authorities should be extended and used to guarantee their strict enforcement.

Industrial Accidents

The program of prevention of blindness in this state should embrace the revision of existing laws, or the enactment of new and better laws regarding the protection of the eyes of persons who work in industries presenting eye hazards. The furnishing of protective goggles by the employer to the worker should be compulsory. The worker should by law be required to wear the goggles when engaged in work which might endanger his eyes. Fortunately, many of our industries do not offer the great eye hazards which prevail in other states. Encouragement and co-operation in the matter of creating popular sentiment for such legislation are required.

The School and Sight Conservation

Educational work along the lines of the "Safety First" idea, which has been carried on from time to time in our schools through the Parent-Teachers Associations, should be continued. A sense of the value of eyesight and the dangers encountered from the use of unsafe toys and playthings which are often the means of producing eye injuries should be instilled in the child.

In spite of large sums spent on construction in recent years, much remains to be done in this state in the way of removing struc-

tural defects detrimental to proper illumination in our schools. While such matters seem far removed from anything pertaining to the production of blindness, many children have had the efficiency of their sight reduced in this way, and eyestrain commonly results.

The school authorities of this state must be awakened to the necessity of the establishment of sight-saving classes. As far as we know there is not such a class established in this state. According to the National Society for the Prevention of Blindness, "the most conservative estimate of the number of pupils requiring special educational facilities offered by sight-saving classes is 1 in 1,000 of the school population, but those who have had long experience in this work have found the proportion to be more nearly 1 in 500." In South Carolina, therefore, with a school population of 489,000, we should have at least 500 to 1,000 pupils who are eligible for such classes.

"The purpose of these classes," as stated by the National Society for the Prevention of Blindness, "is to make possible an education for children who are not blind, but who, because of serious eye difficulties, cannot advantageously carry on their school work under conditions provided for the normally seeing child. The ultimate object, as in all education, is to make possible for the child an opportunity to develop to the fullest his innate abilities."

Time does not allow further discussion of other phases of prevention of blindness in South Carolina, but probably enough has been said at least to help point the way by which much good can be accomplished; for, in the words of Helen Keller:

"The problem of prevention should be dealt with frankly. Physicians should take pains to disseminate knowledge needful for a clear understanding of the causes of blindness. The time for hinting at unpleasant truths is past. Let us insist that the state put into practice every known and approved method of prevention, and that physicians and teachers open wide the doors of knowledge for the people to enter. The facts are not agreeable reading: often they are revolting, but it is better that our sensibilities should be shocked rather than that we should be ignorant of facts on which rest sight, hearing, intelligence, morals, and the life of the children of men.

"Let us do our best to rend the thick curtain with which society is hiding its eyes from the unpleasant but needful truths."

Editorial

Louisa Lee Schuyler Centennial—1937

IN celebration of the centennial of the birth of Louisa Lee Schuyler, one of the founders of the National Society for the Prevention of Blindness, we are reprinting herewith from our *News Letter* of December, 1926:

Born in a period when the place and voice of woman were in the home, Louisa Lee Schuyler was destined to be an example of what a woman with sterling mind and staunch character can do in the world. From earliest girlhood she was a dominant figure in social work. In her early twenties she had already conceived the idea of the organization which grew to be the State Charities Aid Association. To be sure, its fruition was postponed for a period of ten years through the interruption of the Civil War and the many beneficent activities she engaged in during that time, but the fact that the conception did remain rooted through all those years and bloomed, is another indication of her profound sustaining qualities.

Not only could she wait ten years to carry out an ideal, but she could also respond at once to an inspiration and make it an enduring monument. Such indeed was her inspired conception of the Committee which, through her stimulation and endeavor, developed into the National Committee for the Prevention of Blindness.* The idea, coming to her at a time when most women would have felt that their share of worldly care and obligation was past, struck her receptive mind. That blindness in babies could be prevented, and was not, through ignorance, challenged her personally.

She has told, better than any one else could, how she conceived the idea of prevention of blindness work. She described how her attention had been directed to the need of such preventive work through a printed report on the condition of the blind in New York State made by a Commission appointed by the Legislature for the purpose. She told how horrified she was at the announcement that many, many children were blind unnecessarily, and that these children need never have been blind or never would have been blind had a simple precaution been taken at the time of their birth.

"I was horror-stricken. 'Unnecessarily blind,' I exclaimed. 'Why then are they blind? Something must be done about this!' "

*Changed to National Society for the Prevention of Blindness in 1928.

Thus she expressed herself regarding the first intimation she had that blindness could be prevented, and something was done about it. She immediately called a meeting of the writer of the report, Dr. Park Lewis, who still is one of our most active officers, together with a number of other socially minded acquaintances, many of whom are still active, and that gathering was the nucleus of the New York State Committee for the Prevention of Blindness which became the National Committee in 1915.

We need no review of Miss Schuyler's personal services. She gave of herself, as founder, as second vice-president, and as a member of the executive committee. She gave of her mind even after time had wrought its ravages on her tired body, and her spirit is a gift for all time.

The National Committee for the Prevention of Blindness cannot pay too high a tribute to the memory of one who never failed to see when something was to be done and did it. There is no marble fine enough to commemorate the rarity of her splendor. She has left behind her monuments of nobler quality. The State Charities Aid Association is one, the Bellevue Training School for Nurses is another, and, not least of them, is the National Committee for the Prevention of Blindness.

Note and Comment

Three States Open Sight-Saving Classes.—With the recent establishment of sight-saving classes in Memphis, Tenn.; Greensboro, N. C.; and Wichita, Kans., three new states have been added to the roster of those maintaining such classes. The Memphis class was promoted by the Junior League; the Greensboro Class, by the local Kiwanis Club; and the Wichita class, by the Kansas Society for the Prevention of Blindness.

Light Housekeeping.—Whether considered from the viewpoint of economy or of visibility, it is well worth the time and money spent to keep lighting fixtures clean and in good repair, according to Samuel G. Hibben, in a recent issue of the *National Safety News*, who sums the matter up with the slogan, "Water is cheaper than watts." The following are some causes of inefficient lighting: dirty lamps and accessories; darkened or discolored walls and ceilings; lamp bulbs of poor quality or low efficiency; empty sockets and unobserved burnouts; old lamps past their prime of usefulness; under-voltage burning of lamps; and improper combination of lamp and reflector. In a test case it was found that the remedying of these defects increased the foot-candles on desk-tops of a large office from 3.75 to 6.78—a gain of 81 per cent.

WPA Issues Bulletin on Goggles.—Four types of goggles used on WPA projects for protection of workers are covered by revised specifications in *WPA Safety Bulletin No. 8:* the cup type, the spectacle type, and welding, and the sun goggles. The specifications require that the materials used in the manufacture of these goggles shall be new and unused, suitable for the purpose, and of enduring quality. They shall also be non-irritating to the skin when subjected to perspiration, and all metals used shall be inherently corrosion-resistant.

The construction must be sufficiently sturdy to withstand rough handling and to stand up under the services for which the articles are intended. All parts shall be smooth and free of sharp edges or

any irregularities which may present a potential hazard through cutting or scratching the worker who is wearing the goggles.

A table of visibility and absorption of light to which the lenses of the goggles must comply is included in the specifications; drop tests to determine breaking quality are also specified.

Machinery Goes Pastel.—"Will you have a machine in shell pink or robin's egg blue?" the modern factory foreman may presumably ask his brawny workers. The question, however, is quite sound, as the modern trend in machinery colors is to effect high visibility by contrasting the color of the machine with the material which is fed into it. Painting machines and equipment in soft pastel shades reduces the worker's effort to see and thereby reduces eyestrain despite the necessity for the eyes to be focussed on operations for long periods at a time. In painting machines, a prime consideration is the use of paint for making levers, handles, knobs, etc., more visible against the background color employed. In daylight the visibility of one color on the background of another is indicated in the following chart:

Visibility	Decoration	Background
1	Black	Yellow
2	Green	White
3	Red	White
4	Blue	White
5	White	Blue
6	Black	White
7	Yellow	Black
8	White	Red
9	White	Green
10	White	Black
11	Red	Yellow
12	Green	Red
13	Red	Green
14	Blue	Red

Malnutrition Causes Night Blindness Among London Slums Children.—Scientific tests carried out on children from East End slums and public schoolboys in East Anglia revealed that from 22 to 36 per cent of the elementary schoolchildren were "definitely

subnormal" as compared with 10 per cent of the public schoolboys who were rated "slightly below normal." The tests further revealed a serious vitamin A deficiency among the elementary schoolchildren which caused them to make a poor showing when they were tested for night blindness by the photometer.

Catching False Claimants.—Writing recently on the subject of malingering after eye injuries, Dr. H. S. Hedges called attention to various tricks resorted to by knaves who make false claims of damage caused by accidents. Among the many malingerers who come to court, those claiming damage to eyesight are by no means the least numerous. They may come with all manner of claims, varying from complete blindness to persistent conjunctivitis, monocular blindness, partial loss of visual acuity in one or both eyes, contraction of fields, asthenopia, persistently dilated pupils, lid injury, etc.

The very behavior of the malingerer is open to suspicion. The big, dark glasses, the bandage on an eye that does not need it, the extreme photophobia, should all put the examiner on guard.

A previous record of vision is invaluable and may often settle the matter without further argument; it is therefore highly advisable that every person should be given an eye examination upon entering the employ of any company.

The unmasking of an unsophisticated malingerer claiming blindness in one eye is usually easy. The use of the Jackson cross-cylinder test or of Snellen's red-green types usually produces results. Another simple test is having the "victim" write his signature with a red pencil on white paper while a red glass is placed over the good eye. For the more skilful malingerer the use of the Worth amblyoscope is recommended.

Many of the other types of eye injuries are very difficult to judge and require not only skill on the part of the examiner but also considerable experience in handling cases where malingering is suspected.

"Quint" has a Squint.—An examination of the famous Dionne quintuplets reveals that their eyesight is normal except that Marie has a slight squint which can be corrected.

Tattooing Cornea with Precious Metals.—A method of tattooing the cornea with gold and platinum to improve vision has been described by Dr. Ramon Castroviejo, of Columbia Presbyterian Medical Center, who says that this procedure is one of the few recent additions to surgery of the cornea which have proved valuable. When superficial opaque spots develop on the cornea, especially near the pupil, they greatly interfere with vision by dispersing the light that passes through the translucent area. Tattooing is used to close up the spaces between the opaque spots and allow light to pass through a concentrated area.

Tattooing also has been used to improve the appearance of the eye in certain conditions, such as albinism of the iris, in which the eyes would be white instead of blue or brown.

India ink and other substances have been tried in corneal tattooing, Dr. Castroviejo said in his summary of corneal surgery. Gold was first used in 1911, and platinum in 1928. The metals, in the form of chlorides, are used in a solution which, after preliminary preparation of the eye, is placed on the opaque spot for two or three minutes. Then adrenalin chloride is added and the gold changes chemically so that a dark brown, almost black, coloring is produced.

Former Scholarship Student Speaks on Sight Conservation.—Fumiko Fukuoka, a scholarship student of the National Society for the Prevention of Blindness, who is now a medical social worker at St. Luke's International Medical Center in Tokyo, presented a paper at the World Conference Committee of the Japanese Education Association, held in Tokyo August 2–7, 1937. In her talk Miss Fukuoka gave a history of the accomplishments of the American National Society for the Prevention of Blindness and commented on the great need of similar work in Japan, where there is but one sight-saving class at the present time.

Color and Light Reduce Eyestrain of Schoolchildren.—Substitution of gay, cheerful colors in the classroom for the usual dull, drab yellow-and-white combination was recommended in a report made public recently by the New York City Board of Education. The report, prepared by the Illuminating Engineering Society, was based on a year's experimentation with lighting systems in the New York

City public schools. The major part of the study is concerned with improving lighting standards. Classrooms were found to range from four to eight foot-candles in the typical schools, while the recommended amount is a minimum of fifteen foot-candles.

To provide "pleasing variety," the report suggests that the classrooms be changed from the traditional cream hue to a more artistic color scheme. Combination of colors, such as a blue-green upper wall and a slightly darker shade for the lower, or a mixture of buff and gray, is held to be of value to the pupils.

Ophthalmologists Set Visual Standards for Drivers.—The paramount importance of good vision in driving and the frequency of accidents caused by the defective vision of drivers led to the preparation of a report by Doctors Nelson M. Black, Harry S. Gradle, and Albert C. Snell, which was read before the Section on Ophthalmology at the Eighty-eighth Annual Session of the American Medical Association at Atlantic City, N. J.

To determine visual standards which are adequate for a greater degree of safety in operating motor vehicles, the committee consulted the following for suggestions and advice: Council of State Governments, National Safety Council, American Automobile Association, National Society for the Prevention of Blindness, Bureau of Legal Medicine of the American Medical Association, United States Department of Commerce, National Bureau of Standards, National Research Council, and many students of traffic problems.

The minimum visual standards recommended vary according to whether the license is limited or unlimited, but in either case the license is granted only to those whose visual acuity and field of vision are sufficiently satisfactory for efficient operation of a motor vehicle.

Book Clinic Diagnoses the Printed Page.—An outstanding feature of the *New York Times* Book Fair in November was the book clinic, which showed twenty samples of printed pages, illustrating make-up faults frequently found in books. Much attention was given to the aesthetic appearance of the page as determined by proportions and type faces. The more important defects, however, were those which tended to cause eyestrain, such as printed lines

which were either too short or too long, printing which was too gray or too black, and paper with a finish either too glossy or too dull.

Orange Life-Savers (Protection, not Confection).—Use of colored life preservers is urged for all ships for greater visibility in case of accident, as the current type of life-saver in white or drab gray is practically invisible in the water, particularly when the sea is rough. A number of tests at the Dayton, Ohio, flying field revealed that chrome orange-yellow can be seen at five times as great a distance as any other color. The Bureau of Marine Inspection and Navigation of the Department of Commerce has given its formal approval of this orange-colored life preserver and it is now on the market.

Unbalanced Diet Affects Night Driving.—In a study made of 600 active adults to determine visual acuity under night driving conditions, it was found that those who had vitamin A deficiency and poor dark adaptation experienced difficulty in driving at night. Treatment with vitamin A and a change in diet restored the dark adaptation of each of these persons to normal. Five of the affected persons had experienced accidents at night—two with injury to pedestrians and three by collision with a fixed object. In each instance the driver was dazzled by the lights of a passing automobile. Several of the other affected drivers had done little or no driving at night for years. Others drove, but disliked it. Since being treated, all drive with ease at night and are entirely relieved of their former difficulties.

Lighting Conditions for Weavers.—A study undertaken by the London Industrial Health Research Board for the purpose of investigating the effects of conditions of artificial lighting on the performance of worsted weavers revealed—(1) that for weaving fairly dark colored suitings, a system of localized general lighting providing fairly uniform illumination on the cloth of about 30 foot-candles, facilitates the work of the weaver; (2) that other light distributions providing somewhat higher illumination of the important parts of the loom and a system of cross-lighting from one side of the looms did not give equally good results since they increased the brightness contrast between adjacent threads.

Humorous Safety Posters.—Teaching the lesson of safety by the humorous method of using a dunce as a model, the Travelers Insurance Company issues a film and posters showing "Ozzie," a stupid workman, depending on "luck" to save him from disaster. Typical of "Ozzie's" behavior is the use of a dirty metal tool to dig a speck from a fellow-worker's eye. In dozens of factories any workman who is foolishly careless or creates an unsafe situation is now labeled by his fellow-workers as an "Ozzie."

Sharp Decline in Fireworks Injuries.—A statement issued by Michael J. Angel, Acting Deputy Commissioner of Labor in New Jersey, indicates that accidents due to fireworks were greatly reduced in 1937, as shown by the following chart:

Year	*Accidents Reported*
1933	642
1934	1073
1935	837
1936	927
1937	36

Who Shall Make Eye Examinations?—The following resolution was adopted by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, February, 1937:

"Whereas, The eyes and the sight of the school child are of the most vital importance for satisfactory school work, and their preservation for future health and efficiency depends upon their wise conservation during childhood; and

"Whereas, The school has a grave responsibility for the conservation of eyesight among school children; and

"Whereas, School administrators in many parts of the United States are frequently besieged with demands for admission into their school systems of eye examinations and eyeglass prescriptions by practitioners other than qualified doctors of medicine; and

"Whereas, The eye, as an organ of vital necessity, requires careful conservation and deserves treatment only at the hands of trained and competent persons; and

"Whereas, Teachers and nurses properly may and often do make rough tests of visual acuity in the classroom, but diagnosis of

diseases of the eye and of disturbances of vision requires more extensive examination and often involves treatment other than the mere fitting of glasses; and

"Whereas, Even the fitting of glasses often requires the paralysis of accommodation through the use of drugs popularly known as 'drops'; now therefore be it

"Resolved, That it is the sense of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, in meeting assembled at New Orleans, February 23, 1937, that the safety of the eyes of school children, the adequate diagnosis of disease, and the correct fitting of glasses require examination of children's eyes (beyond rough visual tests performed by teachers or nurses) by a licensed doctor of medicine and, upon his recommendation, by a medical specialist in diseases of the eye, properly known as an oculist or ophthalmologist."

Reading Clinic of the Air.—In a "reading clinic" recently broadcast over the Columbia Broadcasting System by Dr. Ruth Strang, Director of the Reading Clinic at Teachers College, Columbia University, a 500-word story was read by volunteer readers, who were later tested on their comprehension and memory of the story. This test revealed for all subjects an average reading speed of 475 words per minute and a memory score of 88 per cent, an exceptionally good showing.

Cuban Institute for Safeguarding Vision.—A society with the purpose of compiling statistics on ocular defects and of publishing facts about the most frequent causes of such defects has been established in Havana, according to word received from Dr. Tomás R. Yanes of that society. The president of the first council of the society is Dr. Yanes, who edits the *Cuban Review of Oto-Neuro-Ophthalmology;* and the remaining members of the council are distinguished physicians, architects, engineers and other representatives of the various activities responsible for the conservation of vision.

National Society Notes.—The annual conference of the Society was held at the Hotel Pennsylvania, New York City, in connection with the 66th Annual Meeting of the American Public Health Association, October 5 to 8. "Saving Sight Through Public Ac-

tion" was the subject presented by Dr. William F. Snow, general director of the American Social Hygiene Association, who was the principal speaker at the Society's annual meeting. "Syphilis of the Eye as a Factor in Industry" was discussed by Dr. Park Lewis, a vice president of the Society, at another session on the opening day. Mrs. Eleanor Brown Merrill, associate director, spoke for the Society at its dinner for executive health officers, during which the subject, "Possibilities for Further Statewide Development of Sight Conservation Through Co-operation of Interested Agencies," was discussed by various representatives of the Interorganization Committee on Sight Conservation.

In addition to her work with this Committee, Mrs. Merrill is serving as secretary of the Committee on Development of Medical Social Service in Eye Hospitals and Clinics of the New York City Welfare Council. Following an interview in the Society's office with Mrs. William H. Wilmer, Mrs. Merrill was called to Washington, D. C., for consultation by the newly formed District of Columbia Society for Prevention of Blindness. In the advancement of the Washington Society the services of Mr. Theodore O. Yoder, membership secretary, and Mr. David Resnick, director of publicity, will be extended early in January and again in March.

Mr. Resnick is serving as chairman of the publicity committee for the National Health Council. In this capacity he recently syndicated a series of six articles on health subjects to newspapers throughout the country, in connection with the 1937 Community Mobilization for Human Needs. The series included an article on Prevention of Blindness in the United States by Lewis H. Carris, the Society's managing director.

During an October field trip in Minnesota, Mrs. Winifred Hathaway, associate director, gave talks to audiences totalling 7,375, including talks given at refresher courses for nurses in Hibbing, St. Cloud, and Mankato. She also spoke to many groups of teachers throughout the state, including the Northern Minnesota Educational Association, the Southern Minnesota Educational Association, and the faculty and students of Duluth State Teachers College, Winona State Teachers College and St. Theresa College. Following these talks, she had numerous conferences with sight-saving class teachers and visited many sight-saving classes in both ele-

mentary and high schools, making suggestions for seating, lighting, blackboard work, and general eye care.

The lectures formerly given by Mr. Edward Van Cleve at the Harvard course at Perkins Institution in Boston were given this year by Mrs. Hathaway, who spoke on the prevention of blindness and on sight-saving classes. Among the students attending the course were three foreign students, representing Egypt, Japan, and England.

Through the efforts of Miss Anette M. Phelan, Ph.D., associate in health education, the Eye Health Committee of the American Student Health Association was organized to make a study of the eye health problems of college students. In this, they will have the aid of an advisory committee from the American Academy of Ophthalmology. The Eye Health Committee of the American Student Health Association consists of R. W. Bradshaw, M.D., of Oberlin College, chairman; Lee H. Ferguson, M.D., Western Reserve University; L. M. Hickernell, M.D., Syracuse University; and Ruby L. Cunningham, M.D., University of California. Dr. Phelan is the Society's representative on the Committee. The advisory committee from the American Academy of Ophthalmology consists of W. L. Benedict, M.D., chairman; LeGrand H. Hardy, M.D., and Harry S. Gradle, M.D.

Talks at state nurses' meetings in Martinsburg, W. Va., and Columbia, S. C., were given in October by Mrs. Francia Baird Crocker, R.N., associate for nursing activities. She also spent several days in Washington to formulate definite plans for work with the District of Columbia Junior League.

Following Mrs. Crocker's resignation in December, her duties will be assumed by Eleanor W. Mumford, R.N., who was previously assistant director of the National Organization for Public Health Nursing. Her career includes service in public health work with the Visiting Nurse Service of the Henry Street Settlement in New York City, rural nursing for the American Red Cross in Long Island and in Minnesota, as well as supervising experience in the Visiting Nurse Associations of Philadelphia, Pa., and Orange, N. J. She has also served as a health consultant with the Kellogg Foundation in Michigan and as advisory nurse in the Southern Berkshire Health District.

Current Articles of Interest

The Management of Intra-Ocular Foreign Bodies, William H. Evans, M.D., *Industrial Medicine*, November, 1937, published monthly by Industrial Medicine, Chicago, Ill. Despite the great decrease in industrial eye injuries with the growing use of goggles, many accidents still occur in which foreign bodies penetrate the eye. The treatment in such cases presents a delicate problem, as an error may not only cause the loss of the patient's vision but may also lead to a costly lawsuit. The author of this article, who has had considerable experience, enhances the value of the report by illustrations drawn from literature in the field. His advice is as follows:

1. In the case of every patient with a history of an ocular injury a complete and careful history and a thorough examination of both eyes are indicated, and x-ray examination should be made in practically all cases.
2. Every patient with an intra-ocular foreign body should be hospitalized.
3. Routine use of foreign protein, sulfanilamide and salicylates is indicated, with the hope of preventing and combating infection.
4. Early and frequent use of atropine is indicated in the majority of these eyes.
5. Make haste slowly in determining the procedure to be used in each individual case.
6. Traumatize the eye as little as possible, remembering most of the graver complications are a direct result of trauma or infection.
7. Use of the cautery, thermophore, or electro-coagulation is indicated where there has been a wound or incision made in the sclera, with the hope of preventing separation of the retina.
8. Search for and eliminate all foci of infection as soon as the patient's condition will permit.
9. Explain to the patient, or some responsible member of his family, the gravity of the condition.
10. Do not hesitate to ask for consultation, as very little commendation will be received no matter how brilliant the result, but much criticism is likely to be directed your way, even though every possible effort has been made to save the patient's sight.
11. Keep the patient under observation for possible visual changes that may occur at any time following injury and removal of a foreign body.

A Visual-Acuity Survey: Report of 721 Cases, Clarence W. Rainey, M.D., *American Journal of Ophthalmology*, September, 1937, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. This is the first clinical report since 1925 of a visual-efficiency survey using the percentage method. A preliminary survey of about 15,000 men between 20 and 75 years of age was made. Of these approximately 2,100 (14 per cent) were found with vision less than 100 per cent in one or both eyes, for distance or near, even with the aid of their present glasses, or with some external disease of the eye requiring further study. Seven hundred and twenty-one were chosen at random for this study. The author makes the following conclusions:

1. Because the visual efficiency rapidly decreases with age, due to the loss of accommodation and the prevalence of subnormal and abnormal conditions of the eyes, the need for periodic visual-efficiency examinations at one to two year intervals is apparent.
2. Homatropine (4 per cent) with cocaine (2 per cent) can be used conveniently in determining the refractive state of the eyes at any age, without risk of inducing acute glaucoma.
3. The use of 0.5 per cent atropine solution, four drops a day for four days, is recommended to supplement the effect of homatropine in cases of high refractive error.
4. Cylinder skiascopy, including the rotatory trial, was especially useful for patients whose vision could not be brought to normal and who were often unable to help in the subjective tests at the trial case.
5. The manifest method of refraction is inadequate and inefficient as compared with the method using cycloplegia.
6. The visual efficiency of each of the three groups could be increased by refraction and spectacles. The efficiency of the whole group was raised approximately 25 per cent for distance and 45 per cent for near. The gain of the group already wearing spectacles was 14 per cent for distance and 17 per cent for near.
7. The tests for color blindness were an aid to diagnosis.
8. The ophthalmologist best serves the interests of the employee and employer.
9. The Standard Method of Appraisal of Loss of Vision should be used as the basis of all group examinations.
10. Examinations of the visual fields with the tangent curtain should be made in all cases in which the vision is not normal after refractive errors have been corrected.

Divergent Strabismus, Miss E. E. Cass, *British Journal of Ophthalmology*, October, 1937, published monthly by the British Journal of Ophthalmology, Ltd., London, England. Starting with the statement that whereas the literature on the subject of convergent concomitant strabismus is redundant, that on divergent concomitant strabismus is comparatively scarce, the author summarizes the historical development of previous studies on this subject. She finally presents an analysis of the cases which she herself has studied, illustrating her findings in chart form. Concluding with a survey of the types of cases which respond to treatment, she discusses ways of helping by means of glasses, operations, and orthoptic training.

Diet and the Eyes, Raymond Emory Meek, M.D., *National Parent-Teacher*, August, 1937, published monthly by the Child Welfare Company, Washington, D. C. Modern medical science recognizes the fact that foods cannot be classified merely as "digestible" or "indigestible" but must be chosen with consideration for their effects on all organs of the body, including the eye. In this connection the effects of allergic reactions to certain foods are of considerable importance.

Allergy affects the eyes in many ways and some outstanding results of an idiosyncrasy to different foods may be headaches of the migraine type; inflammation of the lids or eczema; vernal catarrh —an inflammation of the conjunctiva or lining of the eyelids; glaucoma simplex or hardening of the eyeballs; ulcers of the cornea; iritis or inflammation of the colored or pigmented layers of the eye; uveitis; optic neuritis or inflammation of the nerve of the eye; and hives. While we cannot say positively that all these diseases of the eye are a result of food allergy, it is the opinion of some investigators that these conditions may be caused in this way. If the body is sensitized to foreign matter, the eye takes part in the responding sensitization, and the inflammatory reaction in the eye can be explained as a local reaction, a part of the response of the body.

Vitamins, too, must be considered in a diet planned to keep well eyes well and to keep defective eye conditions from progressing. Chief among the vitamins needed for eye health is vitamin A, the lack of which may cause "night blindness" or xerophthalmia. There is no way of telling positively to what extent diet affects astigma-

tism, nearsightedness, inflammation of lids, weak sight, sensitivity to light, blinking of the eyes, or eyestrain. It is known, however, that children who are rapidly becoming nearsighted and who are given a properly balanced diet with plenty of vitamins, respond favorably, and the tendency to high myopia is checked.

Ocular Headache, D. Stenhouse Stewart, M.R.C.S., L.R.C.P., D.O.M.S., *British Medical Journal*, July 10, 1937, published weekly by the British Medical Association, London, England. In order to discover whether a headache is of ocular origin, it is necessary to consider the many possible causes of the headache by means of a complete physical examination. The part of the examination directly pertaining to the eye consists of observation of the optic disks, the use of the Snellen vision measurement test, and the use of the convergiometer to discover whether eyestrain is caused by muscular imbalance. The use of test type and ophthalmoscope, and a rapid investigation of the lateral eye muscle balance at reading distance, will not reveal or exclude every ocular cause of headache, but will represent a simple, rapid, and sound method of insuring that appropriate ophthalmic attention is quickly given to those more obviously needing it.

The Testing of Fitness for Night Flying: The Light Sense, C. E. Ferree, Ph.D., and G. Rand, Ph.D., *American Journal of Ophthalmology*, August, 1937, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. In determining fitness for night flying, important functions to be tested are (a) the ability to see at night and at low illumination and the effect of dark adaptation on this ability and (b) the amount and speed of dark adaptation. Of these latter functions, speed of adaptation seems to be more important than amount of adaptation. To be fit for night flying the candidate must have a normal or better-than-normal rating in power to see at low illumination at the beginning of the period of dark adaptation and throughout its entire course.

Tests are described for the light minimum under light and dark adaptation and for determining the amount and speed of adaptation. A special test of fitness for night flying is also recommended which is sufficiently quick and convenient for use in routine testing

and a procedure is discussed for proving the significance of the test and for determining the critical values to be used in accepting and rejecting candidates for night flying. A suitable instrument is recommended and its advantages for making the test are briefly discussed.

The Physical Condition of Reading Disability Cases, Thomas Harrison Eames, M.D., *Archives of Pediatrics*, August, 1937, published monthly by E. B. Treat and Company, New York. Among the physical conditions that contribute to poor achievement in reading probably the most important are defects of the eyes, including subnormal vision, vision difficulties, accommodation-convergence insufficiencies, refractive errors, muscular imbalances and the like.

Subnormal vision occurred in 56 per cent of the cases of children with reading difficulty as compared with a 34 per cent frequency among unselected school children.

Cases of uncorrected hypermetropia often present normal vision, secured through excessive, constant contraction of the ciliary musculature. These children tend to tire more rapidly and often lose interest in their school tasks soon after starting them, loss of interest being coincident with accommodative fatigue. It will be seen by inspection of the figures that the frequency of hypermetropia is markedly higher among poor readers.

The lower frequency of myopia among children who have trouble in learning to read is natural enough. Low degrees of myopia may be favorable to reading through coincidence of the far point of distinct vision with the position at which texts are held habitually, thus making accommodative adjustment unnecessary. The medical importance of myopia must not be forgotten, notwithstanding little or no interference with reading in some of the cases encountered.

The difference between the groups as regards the frequency of heterophoria (muscular imbalance) in reading vision, and its most common form among school children, exophoria, is striking. Exophoria is a tendency toward insufficient convergence and may be blamed for loss of place and a good many of the confusions that occur in poor reading.

Book Reviews

THE SCIENCE OF SEEING. Matthew Luckiesh and Frank K. Moss. New York: D. Van Nostrand Co., 1937. 548 p.

This latest text from the Lighting Research Laboratory of the General Electric Company is a beautifully printed volume in which the authors attempt to integrate the material of their various previous publications and present in addition investigations completed since their last ambitious contribution (*Seeing*, 1931). The book deals essentially with lighting for seeing, which, incidentally, would have been a more appropriate title.

With reiteration worthy of Cato, Luckiesh for over twenty years has been stressing the importance of light and more light. That this evangelism has not been in vain is evidenced by the increasingly better lighting of stores, offices, factories, and homes. And though other writers on the subject may tend to discount his more extreme tenets, their views have nevertheless been influenced by the research emanating from his laboratory.

Inadequate light admittedly causes eyestrain, fatigue, decreased visual efficiency, and in other ways increases the costs of seeing. But it seems poor judgment to try to attribute also to this cause the defective vision of intellectual workers, and even to some degree the increase in defective vision occurring with age. To the authors, "it is conceivable that the reflex effects of critical seeing and the prevalence of mortality cases from heart disease in occupations demanding critical seeing may be related"—but to a cardiologist, hardly.

Clear seeing demands good light. In 20 per cent of industrial accidents, improper lighting was a contributory cause. During his occupancy of the White House, Theodore Roosevelt lost the sight of one eye in an injury received while boxing. The authors suggest that this misfortune could possibly have been avoided if the lighting had then been better.

The major problems of lighting practice—quantity, distribution, and spectral quality—are interestingly discussed with the authority derived from personal research. Illumination above mere visual re-

quirements increases visual efficiency—"production foot-candles"; further increments add to the ease of seeing, thus reducing nervous tension and promoting human welfare—"humanitarian foot-candles." "It may be conservatively estimated that a 10 per cent increase in production could be achieved universally by increasing the present average illumination of less than 5 foot-candles in work places to 25 foot-candles."

The choice of type-size for sight-saving classes has been necessarily influenced by economic considerations. The cost of books in 24-point type is about three times that of books in 18 point. For the average sight-saving class pupil the difference in size of 18 point and 24-point types can be offset by providing twice the foot-candles on the former. Unfortunately exceptions occur—one pupil was unable to read 18-point type even though the illumination was increased from 10 to 150 foot-candles.

Colored glasses have a very restricted field of use. In the choice of tint, yellow-green, the region of maximum selectivity in human vision, is generally to be preferred. On the rifle-range, such glasses aid definition and reduce the veiling blue haze of distance. At night on the highway, however, colored glasses, by reducing visibility, become a hazard. Glasses are sold for protection from ultra-violet energy when there is no energy of this sort present in sufficient amounts to be harmful.

Colored papers in printing are associated with unestablished claims. "Certainly there is no more magic in colored papers than in colored glasses."

For the lay reader much practical information of this type is popularly presented; while the interest of the technically indoctrinated will be stimulated by the many novel instruments and experiments described.

—James E. Lebensohn, M.D.

La Prophylaxie de la Cécité en Roumanie. Nicolas Blatt, M.D. Bucharest: Reprinted from the Journal, *Le Moment*, 1937. 60 p.

This booklet comprises a neatly organized summary of the work being done in the prevention of blindness in Rumania, treating the subject under the main headings of general information about

Rumania, statistical data, legislation regarding the prevention of blindness, financial resources, and propaganda. Particularly important are: the section on statistics, which not only itemizes the various causes of blindness but gives detailed discussions of certain of the leading causes; section on legislation, which describes laws for treatment of the venereal diseases and for checking the spread of infectious diseases, as well as laws requiring protection in industry and those requiring compulsory eye examinations in the schools and in the army; and the section on propaganda, describing various ways in which the public is educated in the conservation of vision (through newspapers, magazines, lectures, and radio talks). The report contains a brief bibliography of books in French and Rumanian on the subject of prevention of blindness.

THE SCIENTIFIC BASIS OF ILLUMINATING ENGINEERING. Parry Moon. New York: McGraw-Hill Book Company, 1936. 608 p.

That aspect of lighting practice strictly defined as illuminating engineering is extensively treated by the author as an outgrowth of notes used in teaching the subject. For the most part the treatment is exhaustive in the realms of physics of light production and light control. The inclusion of some of this material and most of the mathematical treatment is perhaps justified chiefly from the viewpoint of education of students. From the viewpoint of lighting practice such emphasis upon the physical and mathematical aspects may be misleading to those who do not realize that this link in the entire chain from the powerplant to the realm of seeing and of human beings is only a means to an end. The important end—easy, quick, accurate, certain, safe and comfortable seeing—is reached by the final link which must deal with specifications of light and lighting. Naturally a treatise "based on physics" provides little foundation for specifications of foot-candle levels and of lighting. A scientific basis for such specifications must be developed largely through psychophysiological studies of seeing and of the influences of seeing conditions upon human beings and their efficiency, comfort and welfare. The author's treatment of these complex aspects is so fragmentary that one wonders why he transgressed the boundaries established in the title and preface of the book. In certain aspects of illuminating engineering the author is

very much at home and has made a valuable contribution for those interested in the physical and mathematical aspects of light, radiant energy, light-sources, photometry, light control, lighting fixtures and installations.

—MATTHEW LUCKIESH, D.Sc.

Briefer Comment

THE OCULAR FUNDUS IN DIAGNOSIS AND TREATMENT. Donald Atkinson, M.D., F.A.C.S., Philadelphia: Lea & Febiger Co., 158 p. ill.

This study of the ocular fundus in health and disease is noteworthy in that it is the only English work on the subject in which the illustrations are the work of the author. Hence the value of the illustrations, particularly the excellent color plates, is greatly enhanced. As the book is highly technical in treatment, its permanent value will be limited to ophthalmologists; nevertheless, a study of the volume and particularly of the illustrations may well be recommended to sight-saving class instructors and others who wish to broaden their knowledge of the structure of the eye.

LIGHT, THE RAW MATERIAL OF VISION. Thomas Hall Shastid, M.D. Ann Arbor: George Wahr, publisher, 1936. 64 p. ill.

This brief treatment of light by an eye physician is considered from the viewpoint of physics, the greater part of the volume being devoted to a historical survey of physicists in this field, including a discussion of their viewpoints and illustrated by several diagrams. The discussion of the natural sources of light (stars, sun, moon, etc.) forms a fairly obvious, but nevertheless essential chapter. In conclusion, the author analyzes the eye as a receiving instrument of light-waves and shows how these light-waves are transformed into images. The book is chiefly valuable in that it presents a new angle in the study of vision and as such is helpful in rounding out one's knowledge of the processes involved in the act of seeing.

FOURTH BIENNIAL REPORT. Capetown: South African National Council for the Blind, 1935–1936. 76 p.

While this report deals for the most part with the care of the blind, it also includes some very valuable notes on causes of blind-

ness and gives a survey of special education for blind and partially sighted children.

TWENTY-THIRD ANNUAL REPORT OF THE OPHTHALMIC HOSPITALS SECTION FOR 1935. Cairo: Government Press, 1937. 54 p.

This is a survey of the work done by the Ophthalmic Hospitals Section of Egypt, including statistical charts of causes of blindness, types of operations, and degrees of blindness, as well as detailed data about expenditures.

Books Received

PLANNING FOR HOME CO-OPERATION IN CHILDREN'S WORK. Jean P. Gessell. New York: Methodist Book Concern, 1937. 48 p.

ANNUAL REPORT. New York: The New York Institute for the Blind, 1937. 66 p.

ANUARIO MEDICO-SOCIAL DE CUBA. Habana: Ucar, Garcia y Cia., 1937. 684 p. ill.

TEACHER PREPARATION IN VISUAL EDUCATION. Fannie W. Dunn and Etta Schneider. Washington: American Council on Education, 1936. 102 p.

FACTORS RELATED TO THE CHANGES IN SCHOOL ADJUSTMENT OF HIGH SCHOOL PUPILS. Lester A. Kirkendall, Ph.D. New York: Columbia University Bureau of Publications, 1937. 90 p.

OCCUPATIONAL GUIDANCE. Paul W. Chapman. Atlanta: Turner E. Smith and Co., 1937. 640 p. ill.

Current Publications on Sight Conservation

Note.—The National Society for the Prevention of Blindness presents the most recent additions to its stock of publications. Except for the more expensive ones, single copies are sent free upon request. Unless otherwise specified, they are reprinted from THE SIGHT-SAVING REVIEW. New publications will be announced quarterly.

252. Legal Status of the National Society for Prevention of Blindness, Mason H. Bigelow. 8 p. Not only a discussion of the legal status of the National Society for Prevention of Blindness but a succinct presentation of its various services.

253. Conquerors of Blindness. 75 cts. per 100. Three-color flyer indicating the official and voluntary individuals responsible for sight conservation.

254. Saving Sight Through Cooperation. 75 cts. per 100. Three-color flyer indicating the official and voluntary groups active in sight conservation.

255. Syphilis of the Eye as a Factor in Industry, Park Lewis, M.D. 8 p. 5 cts. The author recommends a paraphrase of the old war-cry of Cato, Syphilis delendum est (Syphilis must be destroyed), as a slogan for a campaign for reducing accidents in industry and for reducing the number of blind and visually handicapped from this disease.

256. Glaucoma, M. Carl Wilensky, M.D. 16 p. 15 cts. The importance of early recognition and proper treatment of every type of glaucoma is emphasized by Dr. Wilensky, who also provided the very excellent illustrations accompanying the article.

257. Development of Sight-Saving Class Work in the Fairhill School, Philadelphia, M. Reba Sprowles. 12 p. 10 cts. This article indicates how a home economics course and courses in salesmanship, social studies, and gardening, as well as a home-making and personal hygiene course, were incorporated in the work of the sight-saving classes at the Fairhill School, Philadelphia.

258. The Rôle of the Social Worker in a Prevention of Blindness Program, Lewis H. Carris and Eleanor Brown Merrill. 8 p. 5 cts. The social worker interprets the doctor's findings to the patient; she interprets the patient's social and personal problems to the doctor, informing him of the relevant facts; she urges examination and treatment of other members of the family when needed; and is responsible for follow-up. The fulfillment of these responsibilities in the care of eye patients is an active contribution to the sight conservation program.

259. Prevention of Blindness in South Carolina, Pierre G. Jenkins, M.D. 12 p. 10 cts. Discussing the prevalence of blindness in his own state, Dr. Jenkins points out various activities in sight saving which

should be incorporated in a statewide sight conservation program.

D109. What Light for the Eyes? James E. Lebensohn, M.D. Reprinted from *Hygeia*, November, 1937. 4 p. $1.75 per 100. One of a series of articles on the question of lighting being published by *Hygeia*.

D110. First Annual Summary of Fourth of July Injuries. Reprinted from the *Journal* of the American Medical Association, November 27, 1937. $1.75 per 100. This is a review by the American Medical Association of Fourth of July injuries in the United States.

Contributors to This Issue

A founder and vice-president of the Society, **Dr. Park Lewis** is well known to the readers of THE SIGHT-SAVING REVIEW.

Dr. M. Carl Wilensky is an assistant professor of ophthalmology at Tulane University, New Orleans, La.

As principal of the Fairhill School, Philadelphia, Pa., **Miss M. Reba Sprowles** has an opportunity to co-ordinate the sight-saving class work with that of the regular classes.

Mr. Lewis H. Carris is managing director and **Mrs. Eleanor Brown Merrill** is associate director of the National Society for the Prevention of Blindness.

Dr. Pierre L. Jenkins is a practising ophthalmologist in Charleston, S. C.

Book reviewers: **Dr. James E. Lebensohn,** a practising ophthalmologist, is a frequent contributor to *Hygeia;* **Dr. Matthew Luckiesh** is a co-author with Dr. Frank K. Moss of many books and articles on the subject of lighting.

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